

**THE GREAT PLAN FOR
TRANSFORMING NATURE**

BY

KOVDA VICTOR ABRAMOVICH

**Publishing House of the Academy
of Sciences of the USSR**

Moscow 1952

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May 2020

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Kovda Victor Abramovich

**Source:
Publishing House of the Academy of
Sciences of the USSR,
Moscow 1952**

A K A D E M Y OF SCIENCES OF THE USSR

**COMMITTEE PROMOTING THE
CONSTRUCTION OF 1 HYDROELECTRIC POWER
STATIONS. CANALS AND IRRIGATION SYSTEMS
POPULAR SCIENCE SERIES**

V. A. KOVDA

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NATURE**

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of Sciences of the USSR**

Moscow 1952

**Under the General editorship of The
Commission Of the Academy of Sciences of the
USSR for the publication of popular science
literature and series .Results and problems of
modern science”**

**Chairman of the Commission academician
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THE PATH TO ABUNDANCE AND WELL-BEING

In the decrees of the Council of Ministers of the USSR about creation of the state of shelterbelts, irrigation and flooding of Central-Chernozem regions, the Volga, the Caspian and the Rostov steppes of the lower reaches of the Amu Darya, West of Turkmenistan desert Kara-Kum, southern Ukraine and Northern Crimea, the majestic construction of hydropower plants on the Volga, Amu Darya, Dnieper and don, are embodied the genius of the Stalinist plan for the transformation of nature is one of the most important parts of the daunting challenge of creating the material base of communism in our country.

Stalin's plan to build powerful waterworks and master the elements of nature opens a new stage in the development of Marxist-Leninist science of nature and society. In the Stalinist plan for the transformation of nature, the Marxist-Leninist doctrine of the unconditional cognizability of all phenomena and laws of nature, of the possibility and necessity of expedient management of natural processes in the interests of Communist society, finds further development.

The great Stalinist plan for the transformation of nature is based on the principle of a comprehensive impact on the nature of the steppes and deserts in order to radically change it. The nature transformation works outlined in the plan are exceptionally broad: they cover most of the territory of the two continents — Europe and Asia.

A comprehensive set of measures will ensure the possibility of targeted changes and appropriate management of the main natural processes in the geophysical shells of the globe within a significant part of our country.

In a historic speech at the pre-election meeting of voters of the Stalinist electoral district of Moscow on February 9, 1946, J. V. Stalin formulated a program for creating the material basis of a Communist society in the next 15 years. In carrying out this Grand plan for building communism in our country, the peoples of the U.S.S.R., led by the Communist Party, achieved great success.

Adopted by the Supreme Soviet of the USSR in March 1946, the post-war five-year plan for the restoration and development of the national economy of the USSR for 1946-1950 was successfully completed, and the most important tasks were significantly exceeded. The Five-Year plan was fulfilled by the industry of the USSR ahead of schedule—in 4 years and 3 months. The pre-war level of industrial output was exceeded by 73%. Plans for metal production, coal mining, oil production, power generation, production of machine tools, machinery, devices, construction materials, basic food products, and other industries have been exceeded. Tasks were completed to increase the productivity of industrial workers and reduce the cost of industrial products. The main production assets of the entire industry in 1950 they increased by 58% in comparison with 1940, and in 1951 they increased by another 12%.

Agriculture has reached a new powerful growth. The social economy of collective farms has grown and become even stronger, the material and technical base of agriculture has increased, the role of MTS in collective farm production has increased, and new qualified personnel of agricultural production organizers have been trained. The acreage of grain crops has increased. The gross grain yield in 1950 exceeded the average crop in 1940 by 345 million poods. The acreage and gross yield of technical and forage crops, melons and potatoes increased. The tasks for increasing the number of public livestock on collective farms have been exceeded. The

technical armament of agriculture has increased. During the five-year period, agriculture received 536 thousand tractors, 93 thousand grain combines, and hundreds of thousands of different agricultural machines.

Tasks on protective afforestation are being successfully carried out—planting and seeding of protective forest stands on an area of 1350 thousand hectares has been carried out.

All types of transport and communications have achieved significant development over the years of the post-war five-year plan.

The task of the five-year plan to increase national income has been far exceeded. National income in 1950 increased compared to 1940. (in comparable prices) by 64% instead of the 38% set by the five-year plan, and in 1951 it increased by another 12% compared to 1950. As a result, the material situation of workers, peasants and intellectuals has significantly improved, major capital investments have been made in the national economy, and the necessary state material and food reserves have been accumulated.

While in capitalist countries the national income is mostly appropriated by the capitalist class and spent on preparing new wars, in the Soviet Union the entire national income belongs to the workers. In 1950 the workers of the USSR received 74% of the national income to meet their personal material and cultural needs, while the remaining 26% of the national income remained with the state, collective farms and cooperative organizations for the expansion of socialist production and for other national and public needs.

A huge increase in the number of workers and employees, the growth of money and real wages of workers and employees and of farmers' incomes, systematic decline in prices on goods of mass consumption, the growth of public expenditures on cultural and household service workers, wide housing, to further the flowering of culture, science, art,— all these are

bright indicators of a steady increase in the material and cultural standard of living of the working people of the USSR, an immutable law of socialist society.

“...As a result of the growth of the welfare of the people and the success of Soviet health care in our country, the death rate has decreased by half compared to the pre-war 1940 year and child mortality has decreased even more. The annual net increase in the population of the USSR is already within a few years it exceeds the population growth in 1940 and amounts to more than three million souls.”¹

During the implementation of the post-war Five-Year Plan, at the initiative of comrade Stalin, major decisions were taken on the further development of the national economy and the transformation of the country's nature.

In 1947, by the decision of the Central Committee of the CPSU(B) and the Council of Ministers of the USSR, extensive work was started on the development of irrigation in the Central black earth regions of the Soviet Union.

The year 1948 was marked by a further onset of drought. In October 1948 The Central Committee of the CPSU (B) and the Council of Ministers of the USSR made a decision that formed an epoch in the development of science about conquering the forces of nature, in the struggle of man with drought. The party and the government approved a Grand Plan to create protective forest plantations, introduce grass-field crop rotations, and build ponds and reservoirs to ensure high and stable yields in the steppe and forest-steppe regions of the European part of the USSR. A giant work has been carried out in the years 1950-1951. The creation of powerful hydroelectric power stations, navigable channels, and new irrigation and

¹ 34th anniversary of the Great October Socialist Revolution. Report of L. L. Beria at the solemn ZAZ building of the Moscow Council on November 6, 1951, Pravda, November 7, 1951.

irrigation systems will ensure the further development of all the productive forces of the Soviet state, and eliminate the drought in the South and South-East of the country.

The country of victorious socialism, with each new stage of development, gives to the whole world incontestable evidence of the infinitely increasing power of man, free from capitalist fetters, over the forces of nature. From the construction of the first-born of Lenin's plan of electrification—Volkhov hydroelectric station, the Dnieper and the Farkhad hydroelectric power station on the Syr Darya—to the construction of the cascade unprecedentedly powerful hydroelectric stations on the Volga; from building relatively modest irrigation canals in Central Asia and the Caucasus in the first years of Soviet power, the Great Fergana canal the name of Stalin, who drank of the water of the earth's densely populated Ferghana, until the majestic construction of the Main Turkmen canal, crossing a thousand miles to the desolate desert of Kara-Kum desert and changing the course of the Amu Darya; from the development of irrigation systems on hundreds of thousands hectares in the first five years—for irrigation of millions of hectares in the next 5-7 years,—these are vivid examples of the growing power of socialist technology and success of the planned, socialist economy.

The peoples of the U.S.S.R. rightly see the new construction projects on the Volga, Amu-Darya, the Dnieper, and the don as a manifestation of the greatest concern of the Lenin—Stalin party for the welfare of the Soviet people. Irrigation of many millions of hectares of new land in the Volga region, Ukraine, the don and Central Asia not only opens the way to an unlimited increase in soil fertility, increasing the efficiency of labour and investment in socialist agricultural production, but also dismisses the pathetic claims of pseudo-scientific obscurantists of the United States about the

overpopulation of the globe and the need to reduce the number of people on Earth.

In the next 5-7 years, Stalin's plan for the transformation of nature solves the problems of further growth of the Soviet electric power industry, the complex development of Soviet transport, and the extraordinary flourishing of socialist agriculture, which ensures the creation of a universal abundance of agricultural products.

Irrigation and development of desert lands on large territories, overcoming drought in grain areas is a historically urgent matter that was enthusiastically welcomed by the peoples of the USSR. The Soviet people rightfully called the hydraulic structures under construction the great Stalinist construction sites of communism.

Solution of tasks of the simultaneous construction of several Grand waterworks and irrigation systems, the likes of which was not there in the whole history of mankind is only possible through the success of the socialist state and indicates a high level of the productive forces of the Soviet country and its art and science, the superiority of the socialist system over the capitalist.

Workers all over the world view the great construction projects of communism as an indisputable proof of the aspirations of the multi-ethnic Soviet people to strengthen peace and peaceful construction.

While the imperialists seek to ignite the third world war, conduct a furious arms race, shed the blood of the peoples of Korea, Vietnam, and Malaya, and destroy their cities and villages, the magnificent construction of hydroelectric power stations and irrigation systems in the USSR confirms the peaceful nature of the work and all the thoughts of the Soviet people.

In an interview with a correspondent of Pravda, comrade Stalin pointed out that the rulers of England and the United

States should have known from their own experience that “the multiplication of the country's armed forces and the arms race will lead to the deployment of military industry, to the reduction of civil industry, to the suspension of large civil construction, to an increase in taxes, to an increase in the prices of consumer goods. It is clear that if the Soviet Union does not reduce, but, on the contrary, expands civil industry, does not curtail, but, on the contrary, launches the construction of new grandiose hydroelectric power plants and irrigation systems, does not stop, but, on the contrary, continues the policy of reducing prices, then it cannot simultaneously inflate the military industry and multiply its armed forces without risking bankruptcy.”¹

The great plan for the transformation of the country's nature, created by the genius of Stalin, embodies the diverse and deep experience of the creative work of peoples, people of science and technology of our Motherland and is aimed at subordinating the natural forces of nature to the vital interests of the workers of Soviet society. In the era of our country's transition from socialism to communism, new millions of hectares of previously empty land are being developed, soil fertility is continuously increasing, and an unprecedented abundance of products is being created. Communist society provides unlimited valuable opportunities for the prosperity and culture of a multi-ethnic people to flourish. On the great construction sites of communism, a community of scientists, engineers, workers and collective farmers is growing and strengthening, aimed at implementing historical plans for the transformation of nature. The Soviet country, wisely led by the great coryphée of science, J. V. Stalin, will implement the

¹ J. V. Stalin, Interview with a Correspondent of Pravda. State Political Publishing House. 1951, p. 5-6.

construction of communism in our country in the shortest possible time.

RUSSIAN SCIENCE IN THE STRUGGLE FOR THE TRANSFORMATION OF NATURE

A wide belt of semi-deserts and deserts stretches across the continents of the world, covering a surface of about 35 million square km; of this area, about 25 million square km is located in Africa and Asia.

The abundance of sunlight and heat in extreme waterlessness, the predominance of barren clay and sand plains, salt marshes or stony placers, and a negligible vegetation cover distinguish the desert from all other natural zones of the globe.

The desert has always been a formidable enemy of man. But where the desert is watered, where man waters, cultivates, and fertilizes the soil, it is forced to retreat. In place of the desert, the labour of many generations of farmers creates rich fertile land, orchards, vineyards, fields of rice, wheat, and cotton.

Fertile Ferghana on the Syr Darya river, Khorezm in the lower reaches of the Amu Darya, the lands of Samarkand and Bukhara on the Zeravshan river and Merv on the Murghab river, irrigation areas of China, Egypt in the Nile Delta, irrigated oases of the Indus and Ganges, the inter-rivers of the Tigris and Euphrates—the oldest centres of irrigated agriculture.

However, man has so far managed to reclaim a small area from the deserts. For many millennia of its existence, mankind has been able to create irrigation only on an area of about 80-90 million hectares, which is a little more than 2% of the territory of the deserts of the globe.

The predatory nature of slave-owning, feudal, and capitalist societies, their inherent class oppression, destructive wars, ownership of tools, land, and water, and-in particular

(About STI-anarchy, lack of planning, and crises under capitalism are the reasons why humanity in the past used so little of the world's rivers and fresh groundwater resources for irrigation and desert development.

It is only in our country—the country of victorious socialism—that the Soviet people, for the first time in history, are solving the grandiose tasks of irrigating and watering millions of hectares of land, turning deserts and semi-deserts into flourishing regions.

Dry steppes and deserts in the USSR occupy about 3 million square kilometres, which is up to 14% of the entire surface of our country.

The Russian people, the peoples of the Soviet Union, and Russian science have great achievements in the development of deserts.

Escaping from the oppression of princes and kings, the tyranny of the landlords, Russian and Ukrainian peasant settlers in search of freedom and land went to the Terek and the don, the Volga and the Urals, in the Tauride, the Caspian, the Kirghiz steppe, settled in the plains of the Caspian region and Kazakhstan, in the foothills of the Tien Shan mountains, penetrated into the deserted coast of the Transcaspian, in Semirechye and Northern areas of Khorezm, bringing high agricultural culture of the Uzbek, Tajik, Turkmen, Azerbaijani peoples guardian people's age-old experience of construction of irrigation canals, the creators of irrigated oases among the deserts.

To conquer and develop deserts, vast sandy and saline plains, to give them moisture, to cover them with greenery of gardens, crops and pastures-this dream possessed the minds of millions of workers, guided the thoughts of students-patriots who devoted their lives to the study of the desert and its conquest.

Russian merchant Afanasy Nikitin led a group of Russian merchants to the shores of the Caspian sea in the middle of the XV century, and then went to India alone, long before Vasco de Gama arrived there.

From the half of the XV—mid-XVI century, Russia established lively diplomatic relations with Bukhara and Khiva. In 1694 from the order of the Great Treasury was sent to Persia and India merchant Semyon Maly and his servant Andrey Semyonov. In 1697, according to data collected by employees and traders, ambassadors, Semyon Remezov made a map “Drawing of the land, the entire arid and low-passable stone steppe”. The map summarized all the information available at that time about the PRN-Aral and the Amu-Darya and Syr-Darya basins.

In the time of Peter I, large expeditions were sent to thoroughly study the North of Kazakhstan, the coast of the Caspian sea, the territory of modern Turkmenistan and the lower reaches of the Amu-Darya. The expedition ended tragically. Bekovich-Cherkassky, who, according to the plan of Peter I, carried out research on the possibility of turning the Amu-Darya to the Caspian sea. This expedition was sent to Khiva at the request of the Turkmen foreman Haji Nepes. Khiva Khan, who closed the water of Amu Darya in the channels going to the Turkmen fields, treacherously killed A. Bekovich-Cherkassky.

More successful was the expedition of Florio Beneveni to Bukhara, Persia, and Khiva, which was undertaken with the same goals, but a little later.

The expeditions conducted by the Russian Academy of Sciences in the first half of the XVIII century greatly contributed to the study of the deserts of Central Asia. The results of these works were used in the preparation of the” General land map of the Russian Empire “ — an outstanding work for its time.

Famous Russian geographers-researchers of the end of the XVIII and XIX centuries p. S. Pallas, N. p. Rychkov, G. S. Karelin, I. I. Lepekhin and others did a lot to learn the natural conditions of deserts.

The second half of the XIX century is remarkable the most interesting expeditions of the renowned Russian biologist N. A. Severtsov and I. G. BORSHCHOV, A. I. Konshin, the famous Russian geographer p. P. Semenov-Tyan-Shansky, and the famous traveler I. M. Przhevalsky. Large surveys in the same period were conducted by A. I. Glukhovsky, who for the first time considered ways to transfer the waters of the Amu-Darya along the Uzboy to the Caspian sea. Tsarist Russia could not appreciate the brilliant work of A. I. Glukhovsky, who put forward the idea of connecting the Baltic, Caspian and Aral seas. The tsarist officials saw in 12 A. I. Glukhovsky was a visionary and strongly hindered the implementation of his plans. The materials of this talented researcher-engineer have preserved their significance to this day.

The names of the largest Russian geographers and geologists P. p. Semenov-Tien-Shansky, I. V. Mushketov, N. M. Przhevalsky, G. E. Grum-Grzhimailo, M. V. Pevtsov, P. K. Kozlov, J. S. Berg and V. A. Obruchev are covered with the glory of tireless researchers of the deserts of Asia, their natural resources and ways of their development.

Outstanding domestic hydraulic engineers—M. N. Ermolaev, F. P. Morgunenko, I. G. Alexandrov studied the possibility of using the waters of the Amu-Darya, Syr-Darya, the Dnieper, and the Volga to irrigate the steppes of the South-East and deserts of the Aral-Caspian lowlands. F. p. Morgunenko and I. G. Alexandrov participated in hydraulic construction projects of the pre-war Stalinist five-year plans.

Soil scientists and botanists S. S. Neustruev, L. I. Prasolov, B. A. Keller, N. A. Dima, B. B. Polynov, meliorators M. M.

Bushuev, A. I. Kostyakov did a lot for the knowledge of desert soils, the laws of their development and ways of development.

Deserts and steppes have always attracted the eyes of Russian researchers. Deserts seem to preserve in their appearance the features of ancient times. The scientist, having come to the desert, easily reads the book of the past by the open and treeless terrain, dry beds of dead rivers, coastal ramparts and terraces of former seas, by the appearance and structure of the soil, by the well-preserved buried remains of plants, shells, etc.

The border of the distribution and sizes of ancient water flows of the era of glaciation, the heavy fluctuations of the Caspian sea level, the problem of the flow of the waters in ancient times through turkiska the steppe to the Aral sea, from the Aral to the Caspian sea and the Black sea via the Manych, young, modern processes of mountain building, the problem of the natural “drying” of the rivers and lakes of Asia, the laws of salinization of soils and waters are illustrated in the dry steppes and the deserts of the bright examples of present and past monuments.

But the main thing that attracted Russian scientists to the desert was the desire to learn the laws of their education and ways to master the deserts in the interests of the people.

Advanced Russian science has long been characterized by an active desire to solve the problem of transforming nature and raising the yield of agricultural plants. The Malthusian false doctrines about the “overpopulation” of the globe and the pessimistic conclusions about the inevitable decrease in soil fertility, about the “limitation” of the earth's productive forces, propagated by reactionary scientists of Western Europe and America, were alien to Russian advanced science and met with an irreconcilable rebuff from its best representatives.

Pride of Russian biological science—K. A. Timiryazev—carefully studied the nature of drought resistance of plants and

methods of combating drought. He repeatedly joined the fight against malthusianism, pointing out ways to increase plant productivity and productivity in agriculture. Setting before biology the task to grow two ears where one now grows, K. A. Timiryazev systematically fought against all manifestations of malthusianism in agronomy.

Speaking about the fact that “the XIX century came into life under the impression of the oppressive nightmare of the newly appeared Malthus doctrine”, which justified and explained the eternal “laws” of nature, the doom of a significant part of humanity “to hunger, suffering with their invariable companions- vices and crimes 'mi'”, K. A. Timiryazev exposed Malthus as a false scientist.

In the famous speech “Centenary results of physiology of cancer “(1901), K. A. Timiryazev ridiculed the position of Malthus about the impotence of man in the fight against the supposedly” fatal “ laws of nature. He pointed out that over the past (XIX) century, when the population increased 3 times, the means of food increased 4 times, but the general rise in the production of food in capitalist society is in contradiction with their distribution.

K. A. Timiryazev returned to these questions several times. In the article “the Main features of the history of biology in the XIX century”, published in 1907, he wrote that the practical application of biology to agriculture allowed to produce a radical revolution, in the main views on the factors of soil fertility, it is necessary to create a scientific basis for its progress. Biology has created the basis for the development of true factors of soil fertility and the possibility of “significant increase in agricultural productivity”, refuting the “ominous prophecy” Malthus's. In his articles “Science and the farmer”, “is humanity in Danger of imminent destruction”, “a New victory of science over nature”, K. A. Timiryazev leads an irreconcilable struggle with the bourgeois pseudo-scientists

who prophesied the death of humanity from lack of oxygen (Lord Kelvin) and claimed that by 1931 the world will be destroyed. there will be no free land on the globe to expand the arable area, so the soil will have nothing to fertilize, as the reserves of Chilean saltpetre (Crookes) will be depleted. To these reactionary statements, K. A. Timiryazev contrasted the data that labour productivity in agriculture will grow progressively thanks to science, that in addition to Chilean saltpetre, artificial chemical fertilizers, in particular synthetic saltpetre, appear, that plants provide a normal cycle of oxygen and carbon dioxide in the atmosphere, and therefore humanity in the future is not threatened by the horrors predicted by Malthus, Crookes, Kelvin.

The foundations of modern biology, laid by the great nature Converter I. V. Michurin, are built on the materialistic theory of the possibility of directed alteration of the nature of plants and animals to obtain more valuable and productive forms. Michurinsky agrobiology reveals and mobilizes huge opportunities to increase productivity in agriculture by transforming the nature of plants and animals themselves. Michurin's optimistic, effective slogan :” we cannot wait for favors from nature; it is our task to take them from her” is a strong blow to the decadent Malthusian theories.

Michurinsky biology, with its theoretical positions and practical achievements, refutes the idealistic claims of malthusianism about “limits” in agriculture. J.V. Michurin showed that a person can force every form of animal or plant to change, and moreover in the desired direction, i.e. proved the possibility of a directed alteration of the nature of plants and animals.

The largest Russian geologist, Academician V. A. Obruchev, who has been studying the geology and minerals of our vast country for more than half a century, has made a huge contribution to solving the most important desert development

problem through his research of Kara-Kumov sands. As a result of studies of the origin of this sandy desert and the laws of its development, V. A. Obruchev developed and proposed a system of measures to combat the movement of sand. These measures, including the protection of natural vegetation in the sand, the artificial development of vegetation on them and protection from sand drifts with the help of various shields, remain fully relevant to this day. But even earlier, in the first half of the XIX century, Russian scientists devoted a lot of thorough research and practical work to the fight against moving sands.

These measures, which include the protection of natural vegetation on the Sands, the artificial development of vegetation cover on them and protection from sand drifts using various shields, remain fully important to this day. But even earlier, in the first half of the XIX century, Russian scientists devoted a lot of detailed research and practical work to the fight against moving Sands.

The pioneer of practical methods of fixing moving Sands in the desert V. A. Paletsky carried out sand-strengthening works in 1896 on the Central Asian territory, and in 1905 — on the Ryazan-Ural Railways.

The famous Russian climatologist A. I. Voeykov was directly involved in the problem of irrigation in the desert. He repeatedly pointed out that the irrigation of the desert will give people a powerful tool for managing plant life and obtaining high yields. A. I. Voeikov developed a number of important proposals for the development of cotton farming in Turkestan, showing that the natural environment in Central Asia and southern Kazakhstan is exceptionally favourable for creating new irrigated oases, where cotton culture will find better conditions than in Egypt.

Contrary to the ideas of his contemporaries, A. I. Voeikov showed that a person can actively influence the climate. To

improve the climate, he recommended the creation of various reservoirs, ponds and irrigated areas. A. I. Voeikov persistently emphasized the need to reduce the useless evaporation of water from the surface of reservoirs and soils: before evaporation, water must do a job that is useful to humans. It must be perceived by the roots of plants and, having passed through a developing plant organism, enter the atmosphere through leaves. That is why A. I. Voeikov insisted on using river water for extensive irrigation and on the maintenance of ponds and reservoirs with trees.

The most talented Russian scientist V. V. Dokuchaev — the founder of modern soil science — developed a plan for transforming the natural conditions of the Russian steppe regions. This plan included: regulating large and small rivers of the Russian plain; regulating the flow of water in ravines and gullies by creating ponds lined with trees; regulating the water regime of steppe watersheds by using ponds in hollows and planting them with tree plantations; creating rows of hedges (forest strips) that contribute to the accumulation of snow and the retention of spring runoff; lining forests and hills with forests; use of artesian water for irrigation; regulation of the use of the territory for arable land, meadows and forests, taking into account the need to establish an optimal ratio of land; improvement of soil cultivation techniques for preserving and using moisture.

V. V. Dokuchaev for the first time pointed out that the development of irrigation requires a comprehensive account of the natural conditions of the area (hydrogeological conditions, the state and nature of soils, soil cover, and the chemical composition of irrigation water).

The striking scientific generalizations of V. V. Dokuchaev and his plan to combat drought were not understood and evaluated in the conditions of tsarist Russia, where there was no — Yes, there could not be — the necessary basis for

implementing a broad program of measures to transform the nature of the steppes.

An outstanding contemporary of V. V. Dokuchaev-A. A. Izmailsky, having studied the water regime of the Russian steppes, proved that the landowner agriculture of tsarist Russia uses the natural resources of the country predationally and leads to progressive desiccation and depletion of the soil. In his work "How our steppe dried up", he wrote: "If we continue to look so carefree despite the progressive changes in the surface of our steppes, and in this connection, the progressive desiccation of the steppe soil, there can be little doubt that, in the relatively near future, our steppes will turn into a barren desert."¹

A. A. Izmailsky developed a set of measures of a national nature, which, in his opinion, were to prevent the drying up of the Russian black earth plains, ensure the transformation of dry steppes and eliminate droughts. This plan provided for the creation of artificial reservoirs, measures to accumulate snow and weaken surface runoff in every possible way, to create large reserves of ground water, planting tree strips, etc. Izmailsky himself was well aware that the political and economic conditions of tsarist Russia did not contribute much to the implementation of the measures recommended by him.

The complete scientific failure of the pseudoscientific "theory of marginal yields" and "law of decreasing soil fertility" was proved by the outstanding Russian soil scientist-agronomist academician V. R. Williams.

B. R. Williams discovered and formulated the law of equivalence and irreplaceability of all factors of plant life. By acting comprehensively on the conditions of plant growth, while ensuring the necessary size of the plant's needs for food, water, light and heat, it is possible to completely eliminate the

¹ A. A. Izmailsky. Elected. op M, 1949, page 71.

influence of any “limiting” factor and, progressively increasing soil fertility, get ever-increasing crop yields.

When simultaneously affecting all elements of agricultural production, as shown by V. R. Williams, the “law” of falling productivity of subsequent costs (falling fertility) does not appear at all and can not be manifested. Only with a metaphysical approach to understanding the conditions of plant development and unilateral influence on any one element of these conditions, i.e., in violation of the law of equivalence, and the manifestation of a “limiting” factor is possible.

In the teaching of V. R. Williams about the soil-forming process, an essential place is occupied by the problem of the onset of deserts and steppes on meadow-Chernozem and forest landscapes. Distinguishing the geological and biological cycles of mineral substances, V. R. Williams came to the conclusion that the preservation of mineral compounds in the biological cycle system slows down the accumulation of salts in the oceans, inland deserts and depressions, and that the most important means of preserving substances in this cycle in ploughed areas, a means of reducing surface runoff and preserving moisture in the soils and soils of steppe watersheds, a means of protecting fields from flushing and blowing (erosion) is the grass-field system of agriculture. The grass-field system of agriculture by V. R. Williams includes elements recommended by A. I. Voeikov, V. V.

Another outstanding Russian scientist- agrochemist D. N. Pryanishnikov paid much attention to the transformative influence of proper herbage and fertilizer systems on the soil cover. Based on the works of Russian soil scientists and their classic research on plant nutrition and the role of fertilizers in increasing their productivity, D. N. Pryanishnikov developed the doctrine of biological enrichment of soils with nitrogen using legumes in the correct crop rotation and a systematic

system of soil fertilization in relation to various soil types and economic conditions of the USSR.

Finally, it is necessary to point out the enormous significance of the research of the Soviet soil scientist-physicist-chemist-academician K. K. Giedroyts, who theoretically solved the problem of converting and increasing the fertility of podzolic acidic soils of the forest zone PRN help liming. K-K Giedroyc developed the problem of reclamation of alkaline saline soils common in the steppe and semi-desert areas of the Soviet Union, which will now be widely irrigated by the waters of the Volga, Dnieper and don.

Having established the chemical and physical-chemical nature of alkalinity in saline soils, K. K. Giedroyc proved the possibility of rapid and effective radical improvement of these soils using artificial gypsum. This event is currently being introduced in the steppe regions of the Soviet Union.

The dreams of the best scientists of our country were realized in the Soviet country!

Classical research of Russian scientists in the field of transformation of natural conditions and increasing the yield of fields has been brilliantly developed and widely applied. Collective farms and state farms armed with advanced equipment, hundreds of experimental stations and institutes are busy with the problem of developing new lands.

Since ancient times, in the areas of irrigated agriculture in Central Asia, tree plantations were planted along irrigation channels, and irrigation fields were levelled with the greatest skill for better distribution of irrigation water. Since ancient times, earthy clay fertilizers were used for reclamation of sandy soils, and sand was used to improve heavy structureless clay soils — takyrov¹.

¹ Takyr's are heavy, structureless clay soils. From the surface, they form a dense crust in summer, under which the soil often contains an

We have accumulated centuries-old national experience in finding fresh underground water, various techniques for obtaining it, building underground galleries, conducting small irrigation channels, irrigation of various soils, obtaining good, friendly seedlings of agricultural plants, earthworks on irrigated lands, as well as root reclamation of salt marshes under irrigation conditions.

Soviet scientists are carefully studying the experience of agricultural culture in our country, trying to use all the valuable things that gave humanity its struggle to conquer nature.

The research of Soviet scientists in the field of agriculture is closely intertwined with the work of practitioners. The activities of experimental stations established in the post-revolutionary period in Ukraine, the Caucasus, Central Asia, the black earth regions and the Volga region are directly related to the production work of state farms and collective farms in these territories. Thanks to this partnership, many achievements in the practice of transforming steppes and deserts have received scientific justification, deepening and development in the work of experimental stations and research institutes. Conversely, the results of many studies have been implemented in the practice of advanced state farms and collective farms. The close connection between science and practice, which is peculiar only to the socialist system, made it possible to solve many problems of transforming natural conditions and improving the soil cover of the steppe and desert regions. It can be considered fully developed and ready for wide practical implementation of measures for fixing various types of sand.

increased amount of water-soluble salts. Zina takyrs get wet, turning into a swampy swamp. Takyrs on the terrain are very convenient for irrigation, but need to improve the structure.

The problem of reclamation and development of saline soils that are widespread in the deserts of the Caspian, Transcaucasia and Central Asia has been solved.

Scientific institutions of the Academy of Sciences of the USSR, the Academy of Sciences of the Ukrainian SSR, experimental stations in Ukraine, the Volga region and Siberia have proven in practice that by planter ploughing or using gypsum, with proper crop rotations and high agricultural technology, Solonets can be turned into fertile soil, receiving high yields of grain crops, cotton, nick, beets and herbs. It is proved that the plaster cast of salt pans gives a particularly high result in irrigation conditions.

Historical resolutions of the Council of Ministers of the USSR on the development of irrigation in southern Ukraine, the Crimea, the Middle Volga region, the Caspian sea, and the don create conditions for reclamation and involvement in agricultural production of vast tracts of saline soils. Planting or plastering in combination with herbage and high agrotechnics will allow you to effectively manage use in irrigated agriculture created in these arid steppes, previously barren saline lands.

Great opportunities for transforming the nature of steppes and deserts are opened by the practical use of the achievements of Michurinsky biology. The creation of new plant varieties, acclimatization in the conditions of steppes and deserts of other natural zones or other continents, the impact on various stages of plant development that allows you to accelerate or slow down the passage of these stages, depending on the climatic characteristics of the area, and finally, increasing the resistance of plants against drought and harmful salts, frost and diseases by selection methods, as well as using agro physiological methods of “education” and “hardening”—all this allows you to significantly increase the yields of agricultural plants in the steppe.

A powerful means of increasing crop yields in the steppes is the introduction of proper crop rotations and the creation of protective forest stands.

The previous period of development of Soviet science about the desert and ways of its transformation prepared Soviet scientists, engineers and biologists to perform the majestic tasks that the Soviet government has now set for us.

Stalin's plan for the transformation of nature crowns the glorious path of Russian science and is an exceptional scientific generalization in depth and innovation, created by the mighty genius of J. V. Stalin.

THE FIGHT AGAINST DROUGHT AND SOIL SALINIZATION IN THE SOVIET UNION

In the old, pre-revolutionary Russia, crop failures during the years of drought were especially frequent and disastrous. Small individual peasant farming was vulnerable to drought. Technical backwardness and low agricultural technology led to the fact that every drought in old Russia entailed a severe shortage and starvation of the peasants. Landlords and kulaks profited from the drought and famine, whose large farms could better withstand the drought.

The hot breath of deserts in the form of dry winds and droughts sometimes penetrated into the forest zone of the European part of Russia and was often invaded by Central and, especially, Rostov and Stavropol steppes of southern Ukraine and Northern Crimea, the Volga region and the Urals.

In the XVIII century. in Russia there were 34 dry years, and in the XIX century. - 40; on average, 3-4 normal years account for one dry year.

“Now from my window I see: the ground is poorly covered with snow, a thin green grass, and from this thin blade of grass a man is completely dependent, a huge man with a beard, with powerful arms and fast legs. A blade of grass can grow, it can disappear, the earth can be a mother and an evil stepmother— and nobody knows what will happen. Be as want the earth; so, how do the earth and how it will be able to do... And here is a man in complete control of this thin blade of grass. After all, it is only in a year, almost every day, that she will bring it to the peasant's table a slice of bread, but it may not bring — it itself is at the mercy of every cloud, every breeze, every sunbeam...”¹.

¹ Ouspensky. Paulies. SOBR. Op., vol. 8, Ed. of the USSR Academy of Sciences, 1949, pp. 27-28.

A terrible famine and famine seized the Volga region in 1873. The great Russian writer Lev Tolstoy wrote about it like this:

““Driving through the villages from yourself (from your farm on the river Tanalyk.- VK) to Buzuluk 70 versts, and in the other direction from themselves to Borsk 70 versts... and when I visited the villages, I, who had always lived in the country and knew the conditions of rural life intimately, was appalled by what I saw: the fields were bare where wheat, oats, millet, barley, and flax were sown, so that it was impossible to know what was sown. And this is in the middle of July! On the roads everywhere are people who go either to the Ufa province to new places, or find work, which either does not exist at all, or the payment for which is so small that the worker does not have time to work out what they eat at home.”²

A particularly severe drought was in the Volga region in 1881. A significant part of the population of the Volga region then died out or left their villages.

In 1891-1892, crop failure due to drought caused a terrible famine that took over most of Russia. The progressive Russian intelligentsia, led by L. N. Tolstoy, A. p. Chekhov, and V. G. Korolenko, did much to help the starving population.

In the article “Famine and the black Duma” V. I. Lenin wrote that due to the drought, 20 million people in Russia are swollen from hunger.

The Prague conference of the RSDLP in 1912 specifically noted that “...the hunger strike of 20 million peasants in Russia shows once again the absolutely unbearable... the crushed position of the peasant mass, oppressed by tsarism and the class of serfs-landlords...”³.

² L. Tolstoy L. Poly. SOBR. Op., vol. 17. GIHL, 1936, p. 62.

³ V. I. Lenin, Op. 17, p. 410.

V. I. Lenin pointed out that the small peasant economy is defenceless both against natural disasters and against robbery by landlords and capitalists. He wrote that "...the new vampire capital—it is coming on the Russian peasants under such conditions, when the peasants are bound hand and foot by serfs-landlords, serfdom, landlords, tsarist autocracy. Robbed by landlords, crushed by the arbitrariness of officials, entangled in a network of police prohibitions, carping and violence, bound by the latest protection of guards, priests, and land managers, the peasants are as defenceless against natural disasters and against capital as the savages of Africa.”¹

The great October socialist revolution destroyed capitalism in our country, turned factories, factories, land, Railways, and banks into the property of the entire people, established the dictatorship of the proletariat, and created the necessary conditions for the victory of the legal system and the elimination of the most numerous exploitative class – the kulaks. In this way the October revolution saved our peasantry forever from poverty, ruin, and natural disasters.

From the first days of its activity, the Soviet government, according to the plan of V. I. Lenin and J. V. Stalin, has been carrying out extensive work aimed at preventing drought and fighting its consequences.

In the difficult situation of 1918 The Council of People's Commissars decided to allocate 50 million rubles for irrigation works in Turkestan and on ways to develop irrigation on an area of up to 1 million hectares.

V. I. Lenin in a letter to the Communists of the Caucasus in 1921 wrote: “Irrigation is most needed and most of all will rebuild the region, revive it, bury the past, and strengthen the transition to socialism.”²

¹ V. I. Lenin. Op., vol. 17, p. 473

² Ibid., vol. 32, p. 297.

The victory of the collective farm system in the USSR meant a radical change in the development of agriculture in our country. Millions of individual farms have United into large collective farms, armed with advanced technology and able to implement the achievements of modern science. Freed from the shackles of private property, socialist agriculture launched a fight against drought and high yields.

About 2 billion rubles were spent on the development of land reclamation and irrigation works in the USSR during the period from 1924 to 1942. In pre-revolutionary Russia for the period from 1867 to 1917, only 100 million rubles were spent on these songs.

During the 34 years of Soviet power, new large irrigation systems were created in Uzbekistan, Kazakhstan, Tajikistan, Azerbaijan, Armenia, the Volga region, the Terek river, and southern Siberia.

In Ferghana in 1939, the Great Ferghana canal named after J. V. Stalin was built, with a length of up to 370 km. The richest collective farms of the Ferghana valley, the Tashkent oasis, Sa markaid, Vakhsh, and the Western part of Azerbaijan are famous throughout the Soviet Union, as well as the state farms "Pakhta-Aral", "Bayaut", "Kara-Chala" and others. here they grow fabulous harvests of grapes, cotton, rice, sesame, and Uruk, richly rewarding the work of Soviet people.

Long before the great Patriotic war, the USSR became a country of widely developed cotton production.

In the steppe regions of the USSR was steadily carried out the system of measures to prevent crop failures due to drought: the creation with the help of latest machines deep topsoil, snow retention, weed control, wide application of fertilizers at the correct rotation. The total area of protective forest stands reached 850 thousand hectares by 1941.

Socialist agriculture in the Soviet Union is developing at an unusually high rate. Pre-revolutionary Russia had a gross

grain harvest of no more than 4-5 billion. poods of grain. In 1950, the gross grain harvest in the USSR was 7.6 billion poods. In 1913, tsarist Russia collected 740 thousand tons of raw cotton, in 1940, the gross harvest of raw cotton in the USSR was 2.7 million tons, i.e. 3.5 times more than in 1913. The gross yield of cotton for the post-war 5 years increased by 2.9 times.

The increase in crop yields in the USSR is a direct consequence of the transformation of the social nature of collective-farm agriculture and its technical armament. Huge opportunities in transforming the nature of steppes and deserts were given to our people thanks to the achievements of Michurinsky biology, which allows us to control the nature of plants.

During the years of Soviet power, an extensive and diverse system of measures was implemented to strengthen the technical armament of socialist agriculture and its ability to resist the elements of nature, measures to ensure the growth of labour productivity in agriculture. Socialist agriculture of the USSR, free from the yoke of private property and related crises, has become the most advanced in the world in its technical level of armament, the possibilities of applying the achievements of science, and the deep creative interest of agricultural workers in its development.

These conditions created by the socialist society in the U.S.S.R. open up new, boundless horizons for increasing the productivity of labour in agriculture and throw off forever any "limits" in the production of vital products and raw materials by man.

The practice of socialist agriculture fully justified the scientific forecasts of the great Russian scientists. The leaders of socialist agriculture in the USSR receive unprecedented high yields (in C/ha).

raw cotton	120—155
beets	1600—1800
wheat	80—100
rice	160—170
corn	180—200
flax (fiber)	37—40

These harvests, which are 10-15 times higher than the average harvests achieved in the past, indicate that there are huge further opportunities for General improvement of soil fertility and productivity in socialist agriculture.

The achievements of modern agrobiolgy in the USSR, when agriculture and labour are not bound by capitalist production relations, provide a rise in soil fertility that exceeds the most optimistic predictions of K. A. Timiryazev and V. R. Williams.

The long-term experience of collective farms located in the area of MTS operation in the Stalingrad region is significant. "The collective farms of the Stalingrad region named after Kaganovich, named after Chapaev, "Bolshevik banner", Deminsky and others served by Deminskaya MTS, which develop grass-field crop rotations and create protective forest strips, receive grain yields 3-5 centners higher than neighbouring ones collective farms that do not have forest plantations and do not develop proper crop rotations."¹

The success of the collective farm named after J. V. Stalin (Salsky district of the Rostov region) deserves full attention. Average yields in this collective farm, located on the territory of the dry steppe, which is systematically subjected to drought, for the period from 1944 to 1948, rose from 11.7 to 17.6 C / ha.

¹ "On the plan of protective forest plantations, introduction of grass-field crop rotations, construction of ponds and reservoirs to ensure high sustainable yields in the steppe and forest-steppe regions of the European part of the SSYR", Gospolatzdat, 1951, p. 5.

Socialist agriculture is equipped with first-class tractors and harvesting machines. At the head of collective farms and state farms are experienced personnel, most of them with special agricultural education and extensive production and practical experience. All this ensures a steady increase in crop yields and gross receipts of agricultural products.

Work is being successfully carried out to secure the Sands on large territories and to use them in agriculture on the don and the Dnieper, in the Caspian and Ural Sands, in the Kara-Kum and Kzyl-Kum. About 265 thousand hectares of sand, formerly mobile and advancing on the developed land, is now fixed and stopped. Tree stands of 10-20 years of age spread out like a tent on the expanses of these Sands.

Along with irrigation, the Soviet Union began industrial development of deserts. The richest oil fields of the Nebit-Dag, Emba, coal mines of Karaganda, chemical industry Kara-Bogaz-Gol, non-ferrous metallurgy of Balkhash and Dzhezkazgan, sulfur plants Kara-Kum— this is an incomplete list of large industrial enterprises created by the Soviet people in the desert.

Great work is underway on irrigation on collective farms of the central chernozem regions of the USSR. Irrigation is carried out in such a way that each collective farm in these areas has from 5 to 10% of the irrigated land area. This will make it possible, under any weather conditions, to receive grain crops on collective farms up to 30–40 centners / ra and thereby ensure the collective farm's needs and fulfillment of obligations to the state, regardless of the meteorological conditions of the year. Intensive construction of collective farm irrigation sites is underway; thousands of ponds and pumping facilities are being constructed. The construction of these irrigated sites should be completed in 1953.

In the autumn of 1948, a historical resolution of the party and government was published on a 15-year plan to transform

the natural conditions of the steppe and forest-steppe regions of the European part of the USSR. According to this plan, in the forest-steppe and steppe regions of the European part of the USSR, 8 state forest belts will be created located along the floodplains and watersheds of major rivers. These forest belts will become a powerful barrier to the movement of dry winds from Central Asia and the Caspian deserts to protect the main grain areas from drought.

On an area of about 6 million hectares, a dense network of collective and state farm protective forest stands is being created, covering an area of up to 120 million hectares. In the same areas, grass-field crop rotations are being introduced, more than 44 thousand ponds and reservoirs are being built, and extensive work is being carried out to secure the Sands.

To characterize the scale and pace of work on the creation of forest strips, recall that in the United States, it took 9 years to plant forest strips on an area of 30 thousand hectares; on average, one year was planted on an area of 3.3 thousand hectares.

In the USSR, it is planned to carry out forest planting on an average of 380 thousand hectares per year. In fact, they are carried out twice as fast. By the end of 1951, protective forest plantations were planted on an area of more than two million hectares, more than 13 thousand ponds and reservoirs were created, and more than 350 forest protection stations equipped with the most advanced equipment were organized.

A lot of work is being done for reclamation of saline (alkaline structureless soils). In accordance with the decision of the Council of Ministers of the USSR of September 19, 1949, in the current five-year period, gypsum Solonets in the Ukrainian SSR is carried out on an area of about 300 thousand hectares.

1950 was marked in the history of our country by the adoption of five resolutions of the Council of Ministers of the

USSR, of the greatest importance in the transformation of the nature of the dry steppes and deserts of the Soviet Union.

The construction of powerful hydroelectric power stations on the Volga, Dnieper, Amu-Darya and don will ensure that 22.5 billion kilowatt-hours of electricity per year will be received in the USSR in the next 5-7 years. At the same time, new irrigation and irrigation systems are being created in the area of about 28 million hectares of arid and semi-arid regions of the Volga region, the don, southern Ukraine, the Northern mouth of the Crimea, and the deserts of the Caspian sea, Turkmenistan, and Kara-Kalpakia.

The Soviet people are caught up in the pathos of building magnificent hydraulic structures, new irrigation systems, state forest strips, ponds and reservoirs.

Stalin's plan for the construction of hydroelectric power stations, canals, and the creation of gigantic new irrigation and water supply systems implements Lenin's vision of the grandiose development of the irrigated economy in Russia after the victory of the revolution and opens the way to the transformation of deserts, steppes, and the elimination of drought.

*

The southern latitudes of our country are rich in solar heat and light. The bright southern sun shines here for more than 300 days a year, and the warm, frost-free period lasts for 7-8 months. Chestnut and grey-earth soils of the southern regions of the USSR have high reserves of all nutrients, differing in this from the acidic leached soils of the North.

Artificial irrigation allows you to cultivate the most valuable plants on these soils: cotton, rice, Swatch-Lu, sesame, grow wonderful varieties of grapes, apricots, peaches, pomegranates and quinces. But without artificial irrigation, it is

dominated by a desert or dry steppe, since the natural moisture of rain and snow is extremely small and insufficient for the development of plants.

Precipitation here is only 100-200 mm per year, and the evaporation capacity reaches 1500-2000 mm per year. Only in early spring the plains of deserts are decorated with a cover of short lived ones for 2-3 weeks ephemeral plants that soon die on an arid land.

The scorching sun in summer heats the soil up to 70 oU. The smallest reserves of soil moisture completely evaporate. Subsurface (ground) water is greedily absorbed by the spongy (porous) mass of the soil and evaporates from its surface, leaving dissolved salts in the soil.

In dry steppes and deserts, where the subsurface water is salty and is located at a depth of 1-2 m, saline soils — salt marshes are formed due to strong evaporation.

Salt marshes, along with a large amount of valuable nutrients, contain 2-3%, and sometimes 8-12% of harmful salts for plants. Sodium chloride (table salt), sodium sulphate (medicinal bitter salt), magnesium and calcium chloride and sulphate, and sometimes even soda, accumulate here.

Saline soils are infertile due to their salinity. Only a few plants-Solyanka (some of them resemble cacti) grow sparse bushes on salt marshes.

The snow-white salt crust of the salt marshes sparkles in the sun and is far visible to the traveller. But sometimes a thick dusty layer of salt and destroyed soil is formed (a plump salt marsh), which is blown by the wind, like sand, into the salt dunes and dunes. The appearance and chemical properties of saline soils are extremely diverse. Infertility saline soils is due to the fact that even in a small amount (0,5 — 0,7%) harmful salts disrupt normal plant growth and lower crop (e.g., cotton or beet — 30-40%), and crop yield and quality drops sharply.

When the soil contains 1.5—1.7% salt, most seeds of cultivated plants can not even germinate and give shoots.

Millions of hectares of saline soils of various types will be reclaimed due to the extensive development of irrigation in the South and South-East of the USSR. Saline lands are also among the irrigated territories of the Soviet Union.

Before the great October socialist revolution irrigated agriculture in Central Asia and the Caucasus was not able to deal with salinity. Private ownership of land hindered the implementation of soil reclamation in large areas. Irrigated agriculture in the conditions of private farming was conducted irrationally. In an effort to capture more irrigation water, the khans and Bai made up the land of the poor without water. Too much irrigation water taken to the fields of the rich went into the soil, causing the rise of salty ground water to the surface of the soil and its salinity under the influence of strong evaporation. Therefore, many areas of ancient irrigation in Ferghana, Bukhara and Khorezm had large areas of secondary salt marshes formed as a result of improper irrigation in place of fertile soils.

After the great October socialist revolution, all conditions were created for the implementation of a broad system of land reclamation. Irrigation works initiated by comrade Stalin in the Caucasus, the Volga region, and Central Asia set the socialist agriculture of the USSR, scientists, agronomists, and engineers the task of eliminating the salinization of irrigated soils and carrying out extensive work on reclamation and development of saline soils. in place of fertile soils.

During the years of Soviet power, extensive and diverse expedition and stationary studies of saline soils and methods for their radical improvement were developed. The theoretical foundations of the doctrine of saline soils and their reclamation were created by Russian scientists-academics V. R. Williams, K. K. Giedroyc, N. A. Dima, A. N. Kostya kovylov,

B. B. Polynov, professors L. p. Rozov, S. I. Zhurnanov, V. S. Malygin.

The young generation of Soviet scientists, developing the scientific heritage of their teachers, did a lot to study a variety of saline soils and solve practical issues of their reclamation. This was especially helped by the fruitful work of reclamation institutes and laboratories organized in the Soviet era, especially experimental stations in Azerbaijan, Uzbekistan, Turkmenistan and Kyrgyzstan. We also studied the age-old experience of fighting salinization accumulated by the Uzbek, Turkmen and Tajik peoples in Ferghana, Bukhara, and Khorezm.

Socialist agriculture plays a crucial role in preventing the causes of salinization of irrigated soils in the USSR. In contrast to the capitalist countries, the USSR introduced planned normalized water use, everywhere replaced the ancient imperfect irrigation methods (flooding) with economical furrow irrigation, improved crop rotation, high mechanization and perfect agricultural machinery were implemented in collective and state farms.

In the largest irrigated oases of the Soviet Union, which are subject to secondary salinization of the soil, a developed network of deep drainage reservoirs has been created, diverting salt from the soil and salty ground water from underground horizons to lakes and rivers.

The methods used by Soviet agriculture in preventing soil salinization processes ensured a widespread reduction in the level of ground water and the weakening of salinization of irrigated soils, and in many cases, the complete cessation of these processes.

The 25 — year activity of the giant of cotton growing-the state farm “Pakhta-Aral” - has shown that it is possible to successfully prevent the processes of salinization of irrigated

soils. This state farm, created in the desert, grows 30-40 C / ha of raw cotton in its fields. The experience of the state farm "Pakhta-Aral" will be widely used in the construction of new giant irrigation systems according to Stalin's plan to transform nature.

The means of reclamation of salt marshes is artificial drainage of salty ground water by means of drainage (channels laid to a depth of 2-3 m) and simultaneous removal of salts from the soil by means of special water washings in winter by repeated flooding.

Since ancient times, the farmers of the Fergana, Bukhara and Khorezm produced flushing of saline soil and constructed drainage channels to drain saline ground waters, the so-called saurig Takeshi etc. The experience of the peoples of Central Asia in flushing and drainage, which is well-founded and developed in the works of reclamation stations, is included in the system of measures necessary for the reclamation of salt marshes. Of great interest is the use of rice culture for the reclamation of particularly bad crops barren salt marshes on massifs that are remote from the main irrigated areas.

The long-term work of the Mughan experimental reclamation station in Azerbaijan confirms that on the basis of complex application of deep drainage and flushing, high irrigation techniques and proper agrotechnics, the worst salt marshes containing harmful chloride and sulfuric acid salts in an amount of up to 3-5% can be successfully developed in 2-3 years, with subsequent production of high and stable grain yields 40-45 kg / ha) and cotton (35-40 kg / ha). The same achievements have been achieved by experimental reclamation stations for the development of salt marshes for cotton and beet in the Hungry steppe (Golden Horde station), the Ferghana valley (Fedchenkovskaya station), and in the Kyrgyz SSR (Kantskaya station).

Well-coordinated creative work of a huge team of Soviet scientists, systematic scientific sessions and meetings held at the Academy of Sciences of the USSR, the all-Union Academy of agricultural Sciences named after V. I. Lenin and the Ministry of agriculture of the USSR, allowed us to develop a consistent system of measures to prevent salinization and reclamation of salt marshes for their development.

Among the salt marshes there are soils with a deep water table. There are many of them in the area of the Main Turkmen canal. The development of these saline soils will not require drainage devices. But the flushing of the saline soils from salts will be necessary.

Washing saline soils from salts must be done so as not to cause the rise of ground water toward the surface. And if the rise of ground water is unavoidable, then you have to build drainage in advance. Drainage can be not only in the form of deep ditches (horizontal), but also in the form of deep wells, from which salty underground water is pumped out by pumps (vertical machine drainage).

During the years of Soviet rule, the area of irrigated land has grown by about 2 million hectares; at the same time, significant areas of saline soils have been developed. Cotton yields in the USSR increased several times compared to the previous ones.

Theoretical work in the field of soil salinization control has significantly expanded. The classification of types of irrigated oases and methods of geochemical analysis of the salt balance of the area are developed. This makes it possible to differentiate the measures used to prevent and control soil salinization. For areas such as coastal deltas, it is necessary to divert salty ground water by artificial hydraulic structures. For territories such as watershed plains and high terraces, such measures are usually not necessary.

The decision of the Council of Ministers of the USSR, adopted in August 1950 on the initiative of J. V. Stalin, on a new irrigation system with temporary irrigation channels provides for further expansion of preventive measures to combat salinization, aimed at reducing the loss of irrigation water and reducing the level of ground water.

The widespread introduction of a new irrigation system, the elimination of the excess part of permanent irrigation channels, and careful planning of fields can significantly reduce the loss of water from the irrigation network and in the fields. In the same direction, the continuation of works on equipping irrigation systems with water-measuring and water-regulating devices, construction of engineering head structures and improvement of operational service will have an effect. All these measures will reduce the flow of water filtered from the irrigation network to the ground water, and eliminate the threat of salinization of areas that have some natural outflow of ground water.

Regular grass-field crop rotations will be introduced in irrigated oases, tree protection strips will be planted along major channels and along the borders of oases, and work will continue on artificial drainage of salty ground water.

The great construction of new irrigation and irrigation systems, outlined by Stalin's plan for the transformation of nature, will be accompanied by huge works on reclamation and development of saline soils of deserts and dry steppes.

In the areas of new irrigation in the South and South-East of the European part of the USSR, a planned shoal is being developed radio solontsov. Methods for converting low-yielding saline patches into high-yielding cultural soils are well-established by Soviet science and practice of advanced collective farms in Ukraine and the Volga region. Reclamation of salt pans is based on the introduction of significant amounts

of calcium into them, preferably in the form of gypsum, while simultaneously adding organic substances in the form of manure, compost, green fertilizers or when cultivating perennial grasses. In many areas, the application of gypsum can be replaced by planter ploughing to a depth of 40-45 cm for the use of subsurface gypsum. Some saline soils contain large amounts of gypsum at this depth. By deep ploughing, the subsurface gypsum is extracted to the surface, mixed with the salt layer, and thus provides its improvement.

In the area of the Main Turkmen canal, some areas will require special measures for reclamation of takyrs.

Methods of development of such soils are based on the introduction of large amounts of sand and manure in takyr lands. Studies of the Soil Institute of the USSR Academy of Sciences have shown high efficiency of using oil industry waste on such soils. To implement measures for the development of takyrs, we need mechanisms for transporting and embedding sand in the soil, as well as collecting waste from the oil industry in order to use it on these lands for reclamation.

Socialist agriculture leading to the onset of saline soils. Saline soils in our country are becoming less and less. The time is coming when the saline soil will disappear from our socialist fields, whose fertility will grow indefinitely.

THE GREAT BUILDINGS OF COMMUNISM AND THE DEVELOPMENT OF PRODUCTIVE FORCES

Development of electrification in the USSR. Leading in the Stalinist plan for the transformation of nature is the problem of further development of the country's energy economy.

During the 34 years of Soviet rule, our Motherland has achieved great success in electrifying the country. In 1913, tsarist Russia was one of the last countries in the world to generate electricity annually, producing no more than 2 billion kilowatt-hours. The consequences of the first world war and foreign intervention led to the fact that in 1921, the actual generation of electricity was about 0.5 billion kilowatt-hours.

From the first days of the establishment of Soviet power, V. I. Lenin and J. V. Stalin personally supervised the creation of an electric power base in the USSR.

After the victorious end of the civil war, which led to the defeat of the white guard counter-revolution and the shameful expulsion of the Anglo-French-American interventionists outside the Soviet country, on the initiative of V. I. Lenin and J. V. Stalin, a state plan for electrification of Russia was drawn up, connected with the development of its entire national economy. In 1920 V. I. Lenin proclaimed the historical slogan: "Communism is the Soviet power plus electrification of the entire country"¹

The fifteen-year plan for electrification of Russia (GOELRO plan) outlined the construction of 30 regional power plants with a total capacity of 1,750 thousand kilowatts and an annual electricity generation of 8.8 billion kilowatt-hours.

¹ V. I. Lenin. Op., vol. 31, p. 484.

V. I. Lenin called this plan the second program of the Bolshevik party. In his report at the VIII Congress of Soviets in 1920 V. I. Lenin said:

“Our party program cannot remain just a party program. It must become a program of our economic construction, otherwise it is useless as a program of the party. It should be supplemented by the second program of the party, the plan for the reconstruction of the entire national economy and bringing it up to modern technology. Without an electrification plan, we can't proceed to actual construction.”¹

Further V. I. Lenin said: “Only when the country is electrified, when the technical base of modern large-scale industry is brought under industry, agriculture and transport, only then will we finally win.”²

V. I. Lenin believed that electrification was the right and main path to victory over capitalism: “Electrification in 10-20 years, not a bit afraid of the individualism of small farmers and their free trade in local circulation. If not electrification, a return to capitalism is still inevitable.”³

J. V. Stalin, in a letter written in March 1921 to V. I. Lenin, describes the plan for electrification of Russia in the following words: “An excellent, well-written book. A masterful sketch of a truly unified and truly state economic plan without quotation marks. The only Marxist attempt in our time to bring an economically backward Russia under the Soviet superstructure is really real and the only one possible under the current conditions of the technical and production base”⁴.

J. V. Stalin pointed out that it was necessary, without wasting a single minute on chatter about the plan, to practically start implementing it immediately.

¹ V. I. Lenin. Op., vol. 31, p. 482.

² Ibid., p. 484.

³ Ibid., vol. 32, p. 302.

⁴ J. V. Stalin. Op., vol. 5, p. 50.

Explaining the significance of electrification in the life of the Soviet country, Stalin pointed out: "...by the electrification of the country, Lenin does not mean the isolated construction of individual power plants, but the gradual "transfer of the country's economy, including agriculture (my italics-I. S.), to a new technical base, to the technical base of modern large-scale production", connected in one way or another, directly or indirectly, with the electrification business"¹.

J. V. Stalin wrote about the role of electrification in the creation of a socialist society:

"We need 15-20 million industrial proletarians, electrification of the main areas of our country, cooperative agriculture and a highly developed metal industry. And then we are not afraid of any dangers"².

"...In addition to the possibility of restoring capitalism, we also have the possibility of the victory of socialism, for we can destroy the possibility of restoring capitalism, we can uproot the roots of capitalism and achieve a final victory over capitalism in our country if we conduct intensive work on electrifying the country, if we bring the technical base of modern large-scale industry under industry, agriculture and transport. From this follows the possibility of the victory of socialism in our country."³

Contrary to the predictions of capitalist bosses and their sub-heads, such as the English writer H. G. wells, GOELRO's plan was not only fulfilled, but far surpassed.

The first-born electrification of Soviet Russia was the Shatur'skaya and Volkhov'skaya stations. The Dnipro hydroelectric power station named after V. I. Lenin, which came into operation in 1932, produced more than 2 billion

¹ J. V. Stalin. Op. vol. II, p. 254

² Ibid., vol. 7, p. 132.

³ Ibid., vol. II, p. 228

kilowatt - hours a year, i.e. as much as all stations in pre-revolutionary Russia.

Large power plants were successively commissioned on the sviri, Upper Volga (Ivankovskaya, Uglichskaya, shcherbakovskaya), Transcaucasia, Central Asia, and the Urals. As early as 1932. The Soviet Union produced 13.5 billion kilowatt-hours of electric power, and in 1940, the Soviet Union was the largest producer of electricity. The Soviet Union generated 48.3 billion kilowatt-hours of electricity, ranking third in the world for electricity production.

During the great Patriotic war, the Soviet people continued to create heat and hydroelectric power stations in Central Asia, the Urals, and Siberia. With the completion of the first post-war five-year plan, the Soviet Union ranks first in Europe and second in the world in terms of electricity generation. In 1951, 104 billion kilowatt-hours of electricity will be generated in the USSR.

Such are the growth rates of the electric power industry of the Soviet Union, unprecedented in history and inaccessible to the capitalist world, provided by the conditions of the socialist system.

In the 30 years since the beginning of the great work on the implementation of the GOELRO plan, the Soviet people, under the wise leadership of the Lenin — Stalin party, exceeded this plan by more than 10 times.

The party and government have always attached great importance to the electrification of socialist agriculture.

Along with the growth of electric power capacity in the Soviet country, the supply of electricity to agriculture also increased significantly. Thus, in the first year of the first five-year plan, agriculture in the USSR received about 34 million kilowatt-hours of electricity. 10 years later, in 1937, the supply of electricity to agriculture increased 10 times and reached 330 million kilowatt-hours. In the next decade, despite the

destruction caused by the temporary occupation of some Western territories of the Soviet Union in 1941-1943, the supply of electricity to agriculture more than doubled to 784 million kilowatt-hours in 1947.

The completion of the great construction projects on the Volga, Dnieper, Don and Amu-Darya will significantly increase the supply of electricity to the socialist economy. Electricity will be widely used for irrigation. Collective-farm enterprises and local industry will be electrified. Electricity will facilitate most of the labour-intensive work in agriculture and will become a mandatory element in the life of the collective farmer.

The port economy of the Volga, Don and the industry of the Donbass will be widely supplied with cheap electricity.

The Soviet Union will create powerful energy systems that combine the largest existing power plants and newly built hydroelectric power plants. A unified high-voltage network will enable efficient and planned transmission of electricity over long distances, far to the North, to the Urals, to the Donbass, and to the South, to industrial or agricultural areas, as the need arises.

The great Stalinist construction projects of communism, numerous power plants in collective farms, district centres and small towns will give the country new billions of kilowatt-hours of electricity, which will ensure the Soviet Union's energy first place in the world.

Giant waterworks on the Volga river. According to Stalin's plan, two powerful power plants — Kuibyshev and Stalingrad — are being created on the Volga — the largest river in Europe-whose energy resources are inexhaustible. first place in the world.

The total capacity of both stations will be about 3.7 million kilowatts with 20 billion kilowatt-hours of annual electricity generation. This is more than 10 times the output of all power

plants in tsarist Russia, and almost equal to the entire annual electricity generation in Italy. Existing power plants, including the most powerful hydroelectric power plants in America, such as boulder Dam and Grand Couln, are inferior to the Kuibyshev and Stalingrad hydroelectric power plants in terms of their capacity and power generation. a place in the world.

The Kuibyshev hydroelectric power station with a capacity of about 2 million kilowatts will annually generate 10 billion kilowatt-hours of electricity in the average water year, which exceeds the generation of electricity by all the stations planned by the GOELRO plan, and 4 times more than that provided by the Dnipro power plant. Of this amount of energy, 6.1 billion kilowatt-hours will be sent to Moscow, 2.4 billion it will go to the area of Kuibyshev and Saratov and 1.5 billion kilowatt-hours will be used for irrigation of land in the Volga region.

Kuibyshev power station will be widely used in agriculture, industry and transport in the Middle Volga region.

The water of the Volga with the help of electricity from the Kuibyshev hydroelectric power station will pig 1 million hectares of fertile land. In combination with other activities this will make it possible to obtain a guaranteed high yield in the irrigated area under any weather conditions.

The Stalingrad hydroelectric power plant will have a capacity of at least 1.7 million kilowatts with an annual electricity generation of about 10 billion kilowatt-hours, of which 4 billion will be generated in the future. 1.2 billion rubles will be transferred to Moscow.—to the regions of the Central black Earth regions, 2.8 billion rubles.—to the Stalingrad, Saratov and Astrakhan regions and, finally, 2 billion rubles, kilowatt-hours—for irrigation and irrigation of the lands of the Volga region and the Caspian sea. The transfer of more than 10 billion kilowatt-hours of electricity by both Volga hydroelectric power stations will turn the Moscow hub into the most powerful energy system in the world.

The great Stalingrad canal, up to 650 km long, will run from the Stalingrad dam to the Ural river, crossing the entire Caspian plain. The main and distribution channels will cross the Ural — Volga interfluve.

As a result of irrigation of 1.5 million hectares and irrigation of about 12 million hectares of deserts and semi-deserts of the Caspian sea, the climate conditions of vast territories subject to droughts are improving. The irrigated land will be used for wheat, industrial and vegetable crops. Rice and cotton will be cultivated in the South of the Volga region. Livestock production in these vast steppes will be provided with fresh running water, as well as pastures and hayfields with a stable crop of herbs. Irrigation and irrigation of vast territories, 43

the network of state and kolkhoz-sovkhoz forest belts, afforestation along major trunk combined with the power of the Kuibyshev and Stalingrad hydroelectric power stations will create in the next few years in the Volga region inhabited electrified irrigated agriculture, gardening, horticulture and productive.

The cost of electricity at the Kuibyshev and Stalingrad hydroelectric stations will be 3 times cheaper than at thermal power stations.

The Volga river, which is the most important transport artery connecting Moscow, the Urals with the Caspian sea and the South of the Soviet country, will significantly improve navigation conditions after the Kuibyshev and Stalingrad waterworks are put into operation. A chain of dams—those already built and those that will be built—will raise the water level in the river. Large sea vessels can reach Moscow via the Volga and its tributaries. It is estimated that the Volga river will be able to transport cargo about 40 times more than a powerful railway.

The reservoir formed by the Kuibyshev dam will spread upstream for 500 km. The city of Kazan, which is now located 5 km from the Bank of the Volga river, will be located near the river itself.

The construction of giant power plants on the Volga will unfold on an unprecedented scale.

The Dneproges was built in 1500 days. The construction of the Kuibyshev HPP, with a huge increase in the volume of work, is also scheduled for 1500 working days.

The Boharnois hydroelectric power Station on the St. Lawrence river has been under construction for 16 years; the hydroelectric plant and chemical plant on the Tennessee river have been under construction for 35 years. The dam in the Delta of the Pila river was built for 68 years. The boulder Dam hydroelectric station on the Colorado river with a capacity of 1,320 thousand kilowatts was built for about 20 years, but the installation of equipment on it has been delayed until now.

The construction of the Stalingrad and Kuibyshev hydroelectric power stations will be completed during 1950-1956.

In the Stalinist era, the prophetic words of the great Russian poet N. A. Nekrasov about the Volga river come true:

*Other times, other paintings
I will see the beginning
In the random life of the shores
My favourite river:
Freed from the shackles
The tireless people
Ripens, densely populates
Coastal deserts;
The science of water will deepen;
Over their plain
Giant ships will run*

*By an uncountable crowd
And vigorous labour will be forever
Over the eternal river ...*

The main Turkmen channel. One of the most powerful rivers in Central Asia — the Amu Darya, which originates on the Northern slope of the Hindu Kush, was until recently little used for irrigation. A huge amount of fresh water, amounting to 50-60 billion rubles a year. cubic meters were lost uselessly before the eyes of the dehkans, whose fields have for centuries been cramped by threatening deserts and were in dire need of water.

The duration of floods on the Amu Darya, which begin in March and continue until October, almost completely coincides with the period of growth of agricultural crops. Floods on the Nile, considered one of the best sources of irrigation in the world, begin in August and end in December. Every second, Amu-Darya discharges about 1.5 thousand cubic meters of water into the Aral sea, which contains a lot of fertile silt and dissolved nutrients.

Each cubic meter of Amu Darya water contains twice as much sediment, and they contain much more substances useful for plants than in the river Nile, which is known for its high content of silt.

The rapid current of the Amu Darya is very capricious. Man, PA for hundreds of generations could not master this river. For many centuries, the Amu Darya repeatedly washed away cities and villages, fertile land and did not submit to man. For centuries, the Turkmen people, whose lands in Central Asia were particularly affected by waterlessness, dreamed of using the waters of the Amu Darya for irrigation. The Turkmen people managed to realize their age-old dream only during the years of Soviet power. Under the conditions of the socialist Soviet system, it became possible, with the help of powerful

industry and collective labour, to subdue Amu Darya and subordinate its forces to the interests of the workers.

The main Turkmen canal, built according to Stalin's ingenious plan to transform nature, will bring the waters of the Amu Darya to the territory of the sandy deserts of the Kara Kum and the South-Western subtropical part of Turkmenistan.

It is difficult to overestimate the importance of the canal for the further development of the economy and culture of the Turkmen SSR, nine-tenths of whose territory is occupied by the Kara-Kum Sands.

The main Turkmen canal is 1,100 km long. It originates at the Takhiatash gorge, in the lower reaches of the Amu Darya river. The Uzboy riverbed will be partially used for laying the Main Turkmen canal.

The total area of land suitable for irrigation reaches 3 million hectares in the area of the Main Turkmen canal. The possibility of further increasing the intake of water from the Amu Darya to the Main Turkmen canal to 600 cubic meters per second, provided for by the resolution of the Council of Ministers of the USSR, will allow irrigation and development of huge land masses.

The waters of the Amu Darya in Karakalpakstan and Turkmenistan will irrigate and develop 1.3 million hectares of land, mainly for cotton production. 'At the same time, the oases of ancient Khorezm and Messerian that were lost from waterlessness in the distant past will be revived.

Irrigation soils in Turkmenistan produce exceptionally high yields of cotton, rice, beets, wheat, forage grasses, fruit crops, grapes, silkworms, and so on. thus, in the Tashauz region, the advanced collective farms "Bolshevik", "Name of 8 March" and others receive a crop of 35-40 C/ha of raw cotton from year to year. Irrigation of the lands of Karakalpakstan and Turkmenistan will provide a new rise in cotton production in these areas; cotton production will increase by 7-8 times. In

Turkmenistan, the area of orchards, vineyards, and vegetable gardens will be significantly expanded. The warm dry climate in the South-West of Turkmenistan promotes the cultivation of subtropical plants. Irrigation will make it possible to cultivate olives, pomegranates, persimmons, figs, almonds, etc. along with the cultivation of especially valuable varieties of cotton. Several million mulberry trees will be planted along the banks of the new canals. The existing experience of subtropical farming in the area of Kizil-Atrek suggests the possibility of creating centres of irrigation subtropical agriculture in the South of Turkmenistan.

The decision of the Council of Ministers of the USSR to water up to 7 million hectares of pastures in the Karakum desert, located in the zone of the Main Turkmen canal, opens up rich prospects for the development of livestock in Turkmenistan. Livestock grazing in Turkmenistan is carried out during almost the entire year, mainly on natural pastures. The lack of water significantly limited the rate of livestock development in these areas. Irrigation of pasture lands and proper irrigation along the Main Turkmen canal will create favourable conditions for further development of animal husbandry.

This will allow more than 2 times increase the number of cattle and many times — the herds of horses and herds of Karakul sheep, which have long been famous in this Republic.

The creation of protective forest stands, the consolidation of sand along the Main Turkmen canal, along the largest irrigation and water supply channels, as well as along the borders of new irrigation lands, around industrial enterprises and settlements will play a huge role in transforming the nature of the deserts of Turkmenistan and in the fight against moving Sands. Large stands of saxaul will be used on sand massifs to secure the Sands. The experience of sowing black saxaul and other tree species on the bare sand dunes in the Bukhara region

shows that in 10-15 years it is possible to create a continuous forest that provides the consolidation of the Sands, protection of irrigated oases and the production of large quantities of wood. The industry of the Western regions of Turkmenistan will receive an unlimited amount of fresh water, which is so necessary for its development. The capacity of our cotton gins should increase by more than 10 times.

The capacity of three hydroelectric power stations to be built on the canal (100 thousand kilowatts) will allow electrifying the industry and cities of Turkmenistan, using electric tractors in the cotton fields of the Republic. New factories will be built on the world's largest base of valuable chemical raw materials — in Kara-Bogaz-Gol; the industry of artificial mineral fertilizers for cotton plantations will be developed. The saline deserts of the Cheleken Peninsula and the territories of Nebit-Dag, which are now suffering from waterlessness and terrible winds, will be covered with greenery.

In connection with the rise in livestock productivity and the development of subtropics, a base is being created for the development of the food industry. New plants for the production of canned meat, fruit, etc. will grow. the production of vegetable oil will increase by more than 11 times.

The main Turkmen canal solves four vital problems simultaneously: irrigation, energy, transport, and water supply.

The Turkmen canal will be the largest transport highway connecting the lower reaches of the Amu Darya with the Caspian sea, and through the Volga and Volga - don canal - with the Black, Baltic and White seas. From the transformed desert, important cargo for the national economy of the country will be delivered to Moscow and Leningrad, to the shores of the Transcaucasus and the Baltic.

The main Turkmen channel Amu-Darya-Krasnovodsk in length can only be compared with the Great Chinese channel.

All the other channels of the world, including the American, Indian, and Egyptian ones, are much shorter than it.

The following data give an idea of the pace of this magnificent construction. The Suez canal, 164 km long, took 20 years to build, and the Panama canal, 81 km long, took 20 years to build. The length of the American canal connecting the Hudson with lake Erie is 560 km, the Middle German Rhine-Oder canal is 566 km, and the Joseph canal in Egypt is 420 km. And they were all built over decades.

The main Turkmen canal and the entire system of irrigation and irrigation channels, with a length of about 3000 km, will be built in 7 years. The volume of earthworks on the entire construction will be at least 600-700 million cubic meters.

The country started preparatory work on the construction of the Main Turkmen canal in 1951, and this grandiose construction will be completed in 1957.

Hydraulic structures on the Dnieper. In 1951, preparatory work was started for the construction of the Kakhovka hydroelectric power station on the Dnieper and the South Ukrainian and North Crimean channels. In 1956, the construction of the station will be completed, and in 1957, the construction of channels with the entire irrigation system.

The creation of the Kakhovka reservoir on the Dnieper, the South Ukrainian and North Crimean channels will allow 1.5 million hectares of fertile chernozems to be irrigated in the ancient Zaporozhye and Tauride steppes and 1.7 million hectares of land to be watered, while the Kakhovka hydroelectric power station will provide agriculture and industry with electricity.

The South Ukrainian channel will start from Zaporozhye on the Dnieper. It will carry the Dnieper waters to the Molochnaya river and further, in the direction of Askaniya-Nova, to Sivash. Its continuation will be the North Crimean channel, which will start from Sivash and go to Dzhankoy in

the steppe regions of the Crimea, to Kerch. The total length of both channels, which will form a single waterway.- 550 km.

South Ukrainian and seven - Crimean irrigation systems will surpass all similar structures in Europe, Africa and America in terms of scale and pace of construction and economic significance.

The South Ukrainian and North Crimean channels are complex hydraulic structures. There are two huge dams to be built, which form huge reservoirs with a volume of 14 billion cubic meters. cubic meters on the Dnieper river, near the city of Kakhovka, and in 6 billion. cubic meters on the Molochnaya river. Power plants will be built on these reservoirs. The Kakhovka hydroelectric power station alone will generate about 1 billion cubic meters of electricity. 200 million kilowatt-hours of electricity per year. In addition to reservoirs at the main dams, several small reservoirs with a total volume of up to one billion cubic meters will be built on the channel.

Builders will have to remove about 800 million cubic meters of soil. This is more than 10 times more than the volume of related work on the Suez canal.

Every second, the channel will pass 600-650 cubic meters of water, i.e. the same amount as the Dnipro river passes in the summer months.

The economic significance of the new construction in the South of Ukraine and in the North of Crimea is huge. The most fertile fields, where droughts have been repeated every 3-4 years for the past 60 years, will be irrigated by the Dnieper waters. On irrigated lands, collective farms and state farms will receive abundant and stable harvests.

A significant part of the new irrigated land is intended for the cultivation of cotton, wheat, grapes and various other valuable crops.

Cotton in Ukraine is a new crop, and it is cultivated on non-irrigated lands. Although the climate of southern Ukraine

is characterized by an abundance of heat and the duration of summer, cotton yields were low here. Irrigation of southern Ukraine and Northern Crimea will allow several times to increase the area under cotton and several times to raise its yields.

Thus, a new powerful cotton-growing base will be created in the South of Ukraine and in the North of Crimea, which will provide hundreds of thousands of tons of additional raw materials for light industry.

Due to irrigation, the fertility of Ukrainian and Crimean lands will increase dramatically. The wheat harvest in the southern regions of Ukraine and in the Northern part of the Crimea was kept at the level of 10-11 c / ha. Meanwhile, work on experienced it has been proved that the fertility of the steppe lands allows for their irrigation to produce a grain yield of 30-45 c / ha.

1700 thousand hectares of South Ukrainian and North Crimean lands will be watered and turned into pastures for the development of meat and dairy farming, fine-wool sheep and poultry farming. The South Ukrainian and North Crimean channels will radically solve the problem of water supply to cities and collective farms in currently low-water areas.

Ukraine and Crimea will receive a new energy base that will raise the level of agricultural mechanization even higher. The energy of power plants near Kakhovka and on the Molochnaya river will be widely used for ploughing with electric tractors. Electricity will also be widely used in the threshing of bread in animal husbandry, in the processing of feed, and so on.

The construction of a new irrigation and water-supply network will allow fixing the Dnieper Sands, the movement of which caused serious damage to the national economy, and planting large forests along the canal routes, which together with irrigation and water-supply systems will improve the

climate. Fertile chernozems, a favourable climate, the selfless struggle of the masses of collective farmers for high yields-all this will give a huge economic effect.

Volga-don shipping channel n irrigation of the Rostov and Stalingrad steppes. The construction of the Volga-don shipping channel was started before the war. The war interrupted the construction. In 1947, work on the construction of the Volga-don canal was resumed.

The connection of the two great rivers of the European part of the USSR is an important link in Stalin's Grand plan to transform nature. The Volga, the largest river in Europe, has no access to the ocean. It is closed by the Caspian sea.

According to the plan of the Stalinist genius, the Volga, in the pool which is home to a quarter of the population of the USSR and on the banks of which there are thousands of localities, should become the main waterway of the European part of the USSR.

The construction of the Volga-don railway is carried out at a rapid pace thanks to high technical equipment. This made it possible for the government to shorten the previously set time frame for completing the construction of the shipping channel by 2 years. In 1952 The Volga-don shipping channel will come into operation. Forests from the North, oil from Baku, cotton from Turkmenistan, ores from the Urals, and so on will flow inexhaustibly along the canal and the Volga. The Canal will link together regions separated by thousands of kilometres from each other.

Volga cargo also receives an exit through the Dnieper yaz Ukraine. The main Turkmen canal, which runs deep into Turkmenistan, will continue the Volga highway from the South.

After the Volga-don shipping channel is completed, the Volga will have access to the Black and Azov seas. This will solve the problem of all-Union significance-connecting all the

seas of the European part of the USSR into a single transport system.

The builders of the Volga-don canal have to overcome great difficulties. The level of the Volga is 40 m below the level of the don, and there is a narrow watershed between them. Therefore, we have to create a complex system of locks along the Volga and don slopes of the canal. A big problem is caused by loose soils that lie on the waterway route (on the Volga-Don, locks, channels, spillways are built in soft soils). However, extensive engineering and geological surveys conducted in these areas allowed us to understand the geological structure of the area and find the best conditions for all structures.

According to the technical scheme of connecting the Volga with the Don near the village of Tsimlyanskaya, a dam is being created, about 13 km long, and the Tsimlyansk reservoir (don sea), with a useful volume of 12.6 billion cubic meters. From the Tsimlyansk reservoir, water will be pumped to the Volga-don canal using powerful pumping stations. 13 locks, 3 dams, pumping stations, piers, bridges and other structures will be built on the 101 km long canal route.

A hydroelectric power station based on the Tsimlyansk node dam with a capacity of 160 thousand kilowatts will supply cheap electricity to areas of irrigated agriculture and industry.

In 1951, the construction of the main hydraulic structures should be completed, and the complete completion of irrigation systems is determined by the government for 1946. All auxiliary enterprises and structures were built and put into operation. At present, concrete and earthworks are already being completed; the construction of the Tsimlyansk hydroelectric power station and the new irrigation channels have been largely completed.

Simultaneously with the problem of the Volga-don shipping channel, large national economic tasks will be solved to irrigate semi-arid and arid areas of the Rostov and Stalingrad regions on a plot of 750 thousand hectares in order to obtain high yields of agricultural crops and to water 2 million hectares for the needs of highly productive livestock.

In the Rostov region will be polled 600 thousand hectares flooded and 1 million hectares in the southern districts of the Stalingrad region will be polled 150 thousand hectares flooded and 1 million ha. The waters of the don in 1952 will poll 100 thousand hectares and water 100 thousand hectares of arid land. In 1954, 350 thousand hectares will be irrigated, and 600 thousand hectares will be watered.

Collective farms and state farms will have a wide opportunity to use cheap electricity for field work. Electric energy will also be used for complex mechanization of labour-intensive processes in animal husbandry and other agricultural sectors.

The irrigation program and the creation of conditions for obtaining high and stable yields will be provided by the construction of major hydraulic structures. The don main canal with a length of 190 km, large distribution channels with a length of 568 km, a water supply and irrigation network, and pumping stations will supply water to collective and state farm fields. This irrigation and irrigation network, which for the first time in 1952 will be launched water in arid and semi-desert areas of Rostov and Stalingrad this will ensure an even happier and more prosperous life for the population of these regions. Irrigated land and will be widely used for the cultivation of grain and technical plants. In the collective farms and state farms of the Rostov and Stalingrad regions, irrigated cotton, wheat, rice, and bast crops will be cultivated. Irrigation agriculture will ensure high yields of wheat, rice and cotton on irrigated lands.

The number of cattle, pigs, sheep and poultry should be significantly increased. The production of milk, butter and meat should be expanded by at least 3-4 times, and wool by 2-3 times. The construction of the Volga-don canal solves a whole complex of transport, energy and irrigation problems that affect the further growth of the power and welfare of our Motherland.

Growth of Soviet transport. The Soviet Union had inherited from the old Russia is weak and not evenly distributed transportation network.

The incessant concern of the great founders and leaders of the Soviet Republic, V. I. Lenin and J. V. Stalin, for the development of transport and Soviet transport science, the powerful heavy industry created in the Soviet Union during the years of socialist construction, made it possible to radically re-equip and reconstruct the railway and water transport of the Soviet state, create Zano-so automobile and air transport, and build the best Moscow metro in the world.

Soviet transport during the great Patriotic war not only performed its tasks brilliantly, but also continued to develop.

The construction of gigantic waterworks, canals and irrigation systems in the Volga region, the Caspian and Kara-Kum deserts, in the South of Ukraine and on the SS-g -"PS" of Crimea will have an exceptional impact on the further development of all branches of Soviet transport.

The construction of the Volga-don shipping channel will complete the planned work on creating deep-water routes connecting the White, Baltic, and Caspian seas with the Azov and Black seas.

Thanks to this channel, about 30 thousand km of navigable rivers of the Volga and North-West basin are connected to the black sea Sudeten basin. The construction of the Kuibyshev and Stalingrad waterworks will turn the Volga into a cascade of deep reservoirs connected by a system of perfect locks.

Regular flights of powerful cargo and comfortable high-speed passenger vessels will connect Arkhangelsk, Leningrad, Molotov and Rostov-on-don.

Icebreakers will be widely used to extend the navigation period on the Volga.

The construction of the Main Turkmen canal will solve the problems of widespread irrigation of the deserts of Turkmenistan and establish water transport links between the basins of the Caspian and Aral seas.

The main Turkmen canal will be navigable throughout. It will connect the basins of the largest rivers in Central Asia — the Amu Darya, the Syr Darya, and the Black river via the Caspian and Volga. The Baltic and White seas.

Metal, oil and coal, cotton, timber and grain, automobiles and tractors, products of the food, light and chemical industries will be transported along water routes connecting the most remote economic regions of the Soviet Union; this will relieve the country's Railways.

The network of large canals that will be built for irrigation in the South of Ukraine, in the Crimea and don steppes, as well as on the plains of the Middle Volga, the Caspian sea, and Turkmenistan, will be widely used as a means of cheap local water transport. The experience of using large canals for this purpose is already available in the irrigated oases of the Amu Darya.

In a socialist society, land, water, and air transport are all part of a coherent system that is closely linked to the entire economy of the state, thanks to the planning of the national economy. Therefore, the great Stalinist construction projects will cause a new rise in the development of land transport, which in the conditions of a socialist state does not compete with water transport, but is harmoniously combined with it.

The development of water transport will entail the expansion of the network of Railways and highways,

motorways, and access roads, connecting lines, new stations and ports. 11a new railway crossings and bridges will be built on the Volga, Don, Ural, and Amu-Darya rivers. The number of rolling stock will increase and its turnover will increase significantly.

The Moscow water transport hub will grow significantly. Moscow-now the port of three seas-will become the port of six seas. Cargo turnover will increase many times. New river ports, berths and access roads will be built in the Moscow region.

The huge power generation planned by the Stalinist plan will make it possible to convert Railways to electric traction.

The huge power generation planned by the Stalinist plan will make it possible to convert Railways to electric traction.

Mechanization of works on great construction sites.¹ On the great construction sites of communism, there will be earthworks and lifting operations of a scale and pace that the history of mankind has not yet seen. According to available estimates, it will be necessary to remove and move about three billion cubic meters of soil, lay tens of millions of cubic meters of concrete, and dig thousands of kilometres of channels to irrigate and water millions of hectares of land in the desert and steppes.

Such an unprecedented amount of work, if we use the methods of the recent past, would require a multi-million-strong army of workers who would have been employed on these jobs for decades.

In a capitalist society, technological progress and the creation of new machines, replacing muscular energy mechanical energy not only brings a relief, but still more enhances their operation. In our country of victorious

¹ Compiled from the article "On New Construction Machines and Mechanisms" by winter. "New world", 1951. No. 2.

socialism, the work of people is really facilitated by the broadest mechanization of work.

During the construction of the Dnipro hydroelectric power station, all types of work were widely mechanized.

For the conditions of new construction of communism, the mechanized equipment for the construction of the Dnieper would now be completely insufficient. A mechanical increase in the number of low-power mechanisms would only complicate the production of work. The work on the great construction sites of communism must be mechanized in a completely new way.

Our country has mastered the production of a sufficient number of powerful excavators, walking excavators, scrapers, bulldozers, dump-cars, dump trucks, dredgers, which replace the labour of tens of thousands of people and provide high rates of production.

For the production of earthworks during the construction of canals, powerful dredgers are now used in our country. The dredger, which takes out up to a thousand cubic meters of soil per hour, performs the work of many hundreds of diggers. The most important working mechanism of the dredger is a screw soil leavening agent. The soil is loosened during work, turns into a pulp-a semi-liquid mass, which is pumped through pipes to the place of work with the help of pumps. Such projectiles wash the earthen dam: the water in the future leaves the pulp and the soil is compacted.

At the construction of the Volga and Dnieper giants, large dredging shells will be used, which will allow to produce up to 3000 cubic meters of land per hour.

Another type of earth-moving equipment used in the construction of hydroelectric power stations include high-powered excavators and draglines.

The bucket of powerful excavators has a capacity of 14 cubic meters, i.e. it is equal to a whole car of soil. The height of

the excavator — several floors, weight-1054 t. The excavator consists of 58 spare parts and has 44 electric motors with a capacity of 6000 kilowatts. This is a whole power plant! During the day of operation, the excavator removes and transfers 10 thousand cubic meters of soil.

The walking excavator of the latest design “ESH-14 65” has 48 motors installed. The excavator's engine room resembles the engine room of a small power plant. The excavator is a rotating house, three stories high, with several windows. On a branching very long thick mast—an arrow made of metal—a path is made, on which electric lights are installed on poles. The bucket capacity of the excavator is 14 cubic meters; the excavator can move 600 buckets per shift. The excavator replaces the labour of 10,000 diggers, and it is served by a small group of personnel who move the excavator with the help of two skis located on the sides, which are pushed out by the pistons of huge pumps. Our engineering industry prepares excavators with buckets with a capacity of up to 22 cubic meters.

One of the latest advances in modern technology in the construction of new machines and mechanisms for communist construction projects is the creation of a new digging machine, which will be 1½ times more efficient than a walking excavator. The weight of the new machine will be equal to only 60 tons, while the weight of a walking excavator exceeds 1000 tons.

In the construction of deep excavations, along with powerful dredging machines, blasting will be widely used.

A scraper also belongs to a new type of mechanism—an earth moving machine with a trough-shaped bucket. A scraper takes out and carries 500 cubic meters of soil per shift to a distance of 150 m. This machine, replacing the work of hundreds of people, is controlled by several workers.

In earthmoving operations, hydraulic monitors are also used—electric pumps. A strong jet of water directed by the hydraulic monitor erodes the soil and turns it into a semi-liquid mass, which is pumped through the pipes by the second pump to the destination. The performance of the hydraulic monitor is 3-4 thousand cubic meters per day.

Hydromechanically, for 4½ years of excavation at large construction sites, it is possible to process over 20 million cubic meters of soil.

When performing earthwork, in-line methods will be carried out. A machine system, including a scraper, mechanisms for cleaning the bottom and slopes, can lay several tens of meters of the channel per day. With the help of excavators, the laying speed can be increased several times.

A huge role in every construction is played by transport. Transportation of building materials, soil and equipment is carried out primarily on conventional railway platforms. But, besides this, new dump cars will find wide application on new construction sites, self-unloading heavy-duty platforms with automatically opening sides and a metal body. 20 such platforms serve 2 people. The use of dump-cars in construction replaces the labour of a huge number of people, usually required in labour-intensive work.

Of great importance in construction practice is a new type of dump truck, with a payload capacity of up to 25 tons. A machine with a load capacity of ten tons replaces the work of 30 people and the same number of horse-drawn carts.

Belt conveyors are used instead of previously used wheelbarrows and stretchers to move bulk building materials and concrete over short distances. The daily productivity of this mechanism reaches 30 thousand cubic meters.

The construction of powerful hydroelectric stations and canals is associated with the construction of roads and residential settlements. Soviet industry now has the ability to

fully mechanize these works. In the USSR, equipment is produced that allows you to organize stream construction of roads: a convoy of cars reserves several hundred meters of the finished road per day.

Powerful bulldozers are used to build roads in the areas of great construction projects. The bulldozer is served by one person. Within an hour, the bulldozer levels, cleans the shrubs, falls asleep ditches, ditches, holes on 6 hectares of land.

A powerful earth moving machine is a grader elevator. It is used for digging pits. Its productivity is 400 cubic meters of soil per hour. The Soviet grader elevator per hour performs all the daily work of 80 diggers. Grader elevators fill the railway track with a height of 2.5 m, after which the rails are stacked with a special machine.

Among the hoisting mechanisms, without which construction and installation works are inconceivable, along with all kinds of cranes of significant lifting capacity and simple control that are currently used, there are new, improved hoisting mechanisms, and derrick designs - lifting arrows rotating around its mount. These Soviet mechanisms replace the work of many thousands of workers, since they simultaneously carry heavy loads up to 25 tons, unusually speeding up the work.

A particularly important role in hydro construction belongs to concrete plants. The concrete plant must be fully electrified and provide a large quantity of concrete around the clock and uninterruptedly.

In the Kuibyshev hydroelectric complex, 3 million cubic meters of concrete will have to be laid in 3 years, i.e., 2 million cubic meters per year. According to Academician L.V. Winter, in the last year of operation 550 thousand cubic meters were laid on Dneprostroy, which was a record in those days.

A variety of concrete mixers, concrete pumps, shakers are used for laying concrete. They easily deliver the prepared

concrete and quickly put it into place. Special installations suck moisture and air out of concrete, so that concrete hardens in 10-15 minutes. In the past, this required a day.

Of great importance in the work of concrete plants are concrete mixers, the capacity of the plant depends on the capacity of which. Our engineering plants are preparing to release new concrete mixers with a capacity of 4 cubic meters. The hourly productivity of each of them will be about 48 cubic meters of concrete. 10 concrete mixers of this type will produce 2 million cubic meters of concrete per year. For the production of concrete, it is necessary to pre-harvest crushed stone, which is produced at stone crushing plants. Currently, a group of engineers from the All-Union Scientific Research Institute of Construction and Road Engineering has created mobile crushing and screening plants. These plants are automated factories with a complex set of machines and mechanisms. The crushing and screening plant of this design processes more than 300 tons of stone per day.

The construction of new towns and cities is widely mechanized. The flow method is used in the construction of residential settlements. Thanks to the mechanization of construction, it is possible to commission several hundred square meters of housing every day.

The creative thought of the best scientists and engineers of our country continues to work hard on the creation of new designs of machines and building mechanisms, through which the construction of communism will be successfully completed as soon as possible.

RADICAL IMPROVEMENT OF NATURAL CONDITIONS IN THE USSR

JV Stalin teaches that although the geographical environment is not a determining factor in the development of society (the decisive role belongs to the mode of production), the geographical environment can affect the pace of its development.

Solving the problem of the transition from socialism to communism, the Soviet Union radically changes the geographic environment, artificially creates a more favourable climate and fertile soils, new reservoirs and waterways, new types of plants and new vegetation cover.

Thus, the natural environment, under the influence of the transforming activity of a person in a socialist society, turns into a factor accelerating the pace of development of the country's productive forces and ensuring an ever-expanding production of material goods and the creation of universal abundance inherent in communist society.

New hydraulic structures, giant reservoirs on the Volga, Dnieper, Amu-Darya and Don, irrigation and watering of lands on an area of up to 28 million hectares will have a huge positive impact on the physical and geographical conditions, geochemical processes and biological conditions of a significant part of the two continents of the globe - Europe and Asia.

The area of Europe and Asia is 51.6 million square meters. km The basins of the Caspian and Aral moraines amount to about 4 million square meters. km If we add to this the basins of the Dnieper, Don and other rivers that are planned to be used for irrigation, then in total we get an area reaching 5-6 million square meters. km, which is more than half the area

of all of Europe and about 10% of the surface of Europe and Asia combined.

The majestic changes in nature, which can be compared with geological shifts that change the physical and geographical situation on our planet over millions of years, people in a communist society will consciously and systematically direct.

Biosphere management and its transformation. Radical positive changes will be achieved in the biosphere. Agriculture and forestry are based on the use of the biosphere, i.e., soil cover, plant and animal organisms and microbes for the production of organic matter of food and technical value.

In the Stalinist plan of great work to radically improve the natural conditions of our country, the task of managing the processes taking place in the biosphere occupies a large place. The problem of transforming the biosphere and managing it is being solved by advanced Soviet science from the standpoint of recognizing the possibility and necessity of inheriting by living organisms the changes caused by the influence of the external environment on them.

Michurin Agrobiology. Pushes the scope of agriculture in the USSR far to the north and in the dry steppes to the south, providing in the conditions of socialist agriculture the selection and creation of new high-yielding cultivated plants adapted for development and fruiting even in severe environmental conditions.

On the other hand, guided by these principles, Michurin agrobiology uses the adaptability of agricultural crops to various terrain features and creates varieties that can double and triple their productivity in their usual environmental conditions.

Agricultural technology, aimed at meeting all the needs of developing plants, allows you to identify the best features of plants of these varieties and maximize their productivity.

As a result, agriculture in the USSR now has new, exceptionally high-yielding varieties of cotton, beets, millet, flax, as well as new varieties of wheat and rye, unprecedented in yield and grain quality.

The theory of staged development, developed by academician T.D. Lysenko, gave Soviet socialist agriculture a powerful means of influencing the process of plant development and increased the role of agricultural technology as a factor affecting the environment of their growth. The practical application of the theory of staged development made it possible to obtain a significant economic result due to the pre-sowing preparation of cereals, minting of cotton, and summer plantings of potatoes.

Michurin Agrobiology seeks to provide the greatest fit between plant needs and environmental conditions. This is its fundamental feature and the basis of its success.

Thus, the scientific results of the Agricultural Academy of 1948, which culminated in the complete victory of materialistic, Michurin biology, were included as an integral part of the Stalinist plan for the transformation of nature, which includes both activities affecting organisms and activities affecting the environment.

The Stalinist plan creates opportunities for influencing the biosphere through the widespread use of vegetation to transform the nature of our country.

According to this plan, it is planned to plant 8 gigantic state forest strips, appropriately distributed over 53? 0 km and, with a total area of 117.9 thousand hectares along the watersheds and catch the largest rivers of the country, create protective forest stands on 5709 thousand hectares, consolidate moving sands by forming grassy-wood cover on them.

Green spaces will be created along all major irrigation canals, as well as along the borders of irrigated oases, along roads, along the borders of estates, etc. The widespread

introduction of regular crop rotation will create a powerful continuous grass cover of new plants on the surface of arable and pasture lands.

As a result, in the biosphere of our continent within the borders of the USSR, a rationally placed on the sands, along floodplains and river terraces will be created. on the slopes and plains of the watersheds, a new vegetation cover that produces a huge mass of land and underground plant products and intensively affects the soil cover, the surface and underground water runoff and the surface climate.

Transformation of the upper horizons of the geosphere. The implementation of the set of measures provided for by the Stalinist plan for the transformation of nature will have an extremely large impact on the upper horizons of the geosphere and soil within the arable land of the country. The most important and especially favourable value for the soil cover will be regular grass crop rotation, which will enrich the soil with organic matter and will contribute to the creation of a waterproof lumpy-granular structure that improves soil fertility. The water regime of soils will significantly improve, as the useless evaporation of soil moisture will decrease, the surface runoff of atmospheric waters will decrease, the water permeability and moisture capacity of the soil cover will increase, and, accordingly, the moisture reserves in the soil thickness. Due to land reclamation and irrigation, the now infertile solonetz and solonchak soils of the steppes and deserts will be transformed into completely new, cultivated soddy fertile soils that yield high yields of grain and industrial crops. Vast spaces of moving sands will be fixed and developed. A proper fertilizer system will increase the supply of valuable mineral nutrients. The root mass left by the crop rotation herbs and organic fertilizers will ensure the multiplication and intensive development of the activity of beneficial soil microorganisms. A proper fertilizer system will

increase the supply of valuable mineral nutrients. The root mass left by the crop rotation herbs and organic fertilizers will ensure the multiplication and intensive development of the activity of beneficial soil microorganisms. A proper fertilizer system will increase the supply of valuable mineral nutrients. The root mass left by the crop rotation herbs and organic fertilizers will ensure the multiplication and intensive development of the activity of beneficial soil microorganisms. Grass crop rotations and forest shelterbelts will stop the flushing and blowing of fertile upper, arable soil layers (erosion) and, by reducing the surface and flood runoff, reduce the removal of substances dissolved in these waters (chemical denudation) and protect the soil cover from loss of mineral nutrition elements plants; these elements will be captured by the roots of the plants and trapped in their tissues.

The expansion of land cover on land, covered by the transforming influence of the Stalin plan, will not only increase the scope of the biological cycle of mineral substances and weaken the processes that carry mineral compounds from soils to rivers and seas, but will also enrich the soil cover with elements of plant mineral nutrition.

Management of the hydrosphere and water regime of land. The creation of a new powerful land cover on land will change the hydrosphere and water regime of the country. The vegetation cover of fields, strips of tree plantations and soil with an improved structure will retain moisture from the surface runoff. The floods in the rivers will be reduced, and the regime of their flow will become more uniform.

In the thickness of the subsoil horizons due to the retention of snow and a decrease in water flow, new horizons of fresh groundwater will arise that will feed the plants with moisture through the root system.

A new hydrogeographic network will be created. Tens of thousands of ponds and ponds at the tops of gullies and ravines

will serve as sources of moisture for the surrounding land through filtration and the formation of groundwater, which will be used by ring plantings of tree species around ponds.

A vast area of new colossal reservoirs is being created on the Volga and Dnieper, on the Amu-Darya and Don above dams and hydroelectric stations. A network of deep-water canals (Main Turkmen, Volga-Don) in combination with large dams and canals built in the pre-war period (White Sea-Baltic named after Stalin, named after Moscow) will provide regular transport links of six seas. A new huge network of irrigation canals will emerge - Stalingrad, South Ukrainian and North Crimean, Ergeninsky, Donskoy trunk, etc. In the steppes and deserts—where the land did not know the flow of free water, distribution channels will stretch for tens of thousands of kilometres.

Two inland seas—the Caspian and the Aral Sea - under the influence of the withdrawal of large masses of river water for irrigation and watering, I will begin! lower your level. Since the Caspian Sea has reduced its level over the last geological period, it can be assumed that its drying out will proceed faster than the Aral Sea. In the deltas of the Volga, Kura and Amu-Darya rivers, new lands will be liberated that will be suitable for the cultivation of agricultural plants, especially rice.

As a result of lowering the level of groundwater, the mirror of which on adjacent land, especially in river deltas, will stretch after the falling surface of the sea, the process of soil desalinization will begin.

Colossal amounts of irrigation water will go to the scorched soils of semi-deserts and deserts. Where now only 75-250 mm of atmospheric precipitation falls on land today, thanks to irrigation, an additional layer of water of 500-700 mm will be added. According to the estimates of I. A. Sharov, up to 60 billion cubic meters of water will be delivered annually to land during irrigation. This moisture will then fall

out repeatedly in the form of rains and dew. As a result of this, significant changes will occur in the water regime of land. The old foci of evaporation of river and lake-sea waters will be reduced. Instead of them on land there will be a new, distributed much more evenly network of small reservoirs, ponds and canals that evaporate moisture into the atmosphere.

The nature of land evaporation will change. The evaporation process, which is useless for humans, prevailing in the desert and dry steppes, will be replaced by evaporation through the plant organism, i.e. transpiration processes that are accompanied by the formation of huge masses of new organic matter, which is food or technical raw materials and fuel for industry.

Transforming the land surface climate. Changes in the biosphere, geosphere and hydrosphere will entail profound changes in the local surface climate of the land of our country. A network of state forest belts, collective farm forest shelterbelts in the fields and along irrigation canals, vegetation in the sand, and oak forests created will all have a powerful effect on the movement of dry winds in the surface layers of the land. The destructive role of the dry winds, "haze", "garmsilea", which dry up now unprotected fields with agricultural plants, will be significantly weakened.

Moisture transpiration and irrigation will increase air humidity, which will favourably affect the viability of plants during periods of maximum temperatures and dryness in the summer. Significant, although still not amenable to accounting, changes will undergo the country's internal moisture circulation in the direction of increasing the amount of local atmospheric precipitation. In accordance with the views of A.I. Voyerikov, it can be assumed that additional masses of atmospheric precipitation will be received, in particular, by the East Asian territories of the Soviet Union. The positive changes in the internal water circulation will turn out to be the greater, the

wider they will be involved in the irrigation of the river of the Black Sea basin.

New masses of additional moisture coming through the foliage of the vegetation cover, together with that moisture that is irrigated by irrigated fields, canals, new reservoirs and ponds, will lead to an increase in air humidity. This will soften the climate and prevent drought.

Changes in the water regime of the land will respond to the thermal regime of the soil cover and surface air layer. The surface of the lands irrigated and covered by vegetation in the former deserts will no longer glow to a temperature of 60–70 °, as is characteristic of the bare surface of sand and deserts. On the other hand, as prof. V.V. Zinserling, condensation of vaporous moisture with the formation of additional amounts of local atmospheric precipitation will be accompanied by the release of significant quantities of latent heat of vaporization and cause partial warming of some areas of Siberia.

The creation of a lush vegetation cover over a vast area will cause changes in the oxygen and carbon dioxide content inside the soil layer and in the surface air layer. The oxygen content in the atmosphere will increase and carbon dioxide turnover will accelerate during the synthesis and mineralization of masses of organic matter.

Management of metabolic processes in nature. Karl Marx, while studying the laws of the development of agriculture under capitalism, pointed out that the most important reason for the growing robbery of soil fertility under the conditions of the capitalist system is the violation of the correct systematic exchange of mineral and organic substances in nature as a result of the deepening of the antithesis between city and country.”... Large land ownership reduces the agricultural population to a constantly lowering minimum and contrasts it with an ever-increasing industrial concentration in cities; thereby, it creates conditions breaking an irreparable gap

in the process of social metabolism dictated by the natural laws of life, as a result of which the strength of the soil is wasted,

Replenishment of this “irreparable gap” is possible only if the nature of society and the mode of production are changed.”... A socialized person, associated producers rationally regulate this metabolism with nature, put it under their general control, instead of dominating them like a blind force ...”

Under the conditions of the socialist system, the causes that violate the normal metabolism of nature in nature under the capitalist system are fundamentally destroyed. The powerful development of the socialist industry provides the growing agricultural needs of the country for chemical fertilizers and involves inexhaustible masses of elements of plant mineral nutrition that have been resting in the form of ore in the bowels of the earth’s crust for millions of years.

The favourable direction of the organo-mineral metabolism as a factor in preserving and increasing the fertility of cultivated soils is also facilitated by the grass-field system of agriculture and wide tree stands. As Academician V.R. Williams proved, the correct grass field crop rotation and tree planting allow you to save enormous amounts of plant mineral nutrition elements in the biological cycle of substances and soil cover, tearing these elements out of the geochemical stream that carries them into the oceans.

Mastering the desert and overcoming drought. Red-hot sands and sandstorms, waterless clay deserts and dry steppes, salt marshes with their brines unsuitable for drinking, are terrible and hostile to man. Desertlessness in the desert means death. The emirs, khans and bais in Central Asia more than once used terrible punishment to suppress the rebels - they closed the canals and deprived the population, fields and livestock of water, dooming the people to death from thirst and hunger.

The Mongol conquerors, in order to break the resistance of ancient Khorezm and Merv, destroyed the main structures of the main canals supplying water to cities, villages and fields. The abundance of sun and heat, the inexhaustible reserves of nutrients in the desert soils, the long frost-free period allow, under the condition of artificial irrigation in the desert, to collect not one crop, as in the northern zones, but two and three crops in one goal. Irrigation is the best and most powerful means of transforming the desert and meeting the plant's needs for moisture and food.

In deserts, especially southern ones, due to the growth of peculiar shrubs, as well as autumn and winter rains and the rapid growth of grasses, the so-called ephemera, there are year-round pastures where herds of more northern or alpine regions covered with snow flow in winter. Therefore, the herder always sought to sand desert. But the waterlessness of the desert, the moving sands were a scourge for the herder, before which he was powerless.

The Stalinist plan for the creation of new irrigation and watering systems will provide the opportunity for agricultural development of the deserts of the Caspian Sea and Turkmenistan, arid steppes. Crops of grain bread in irrigated fields will rise to the level of 30-45 and / ha. Droughts will disappear, as the reasons that gave rise to them will be eliminated.

The cotton industry will be intensively developed on the basis of the introduction of regular grass field crop rotation, high-tech machinery and soil chemistry. A component of crop rotation will be the cultivation of perennial leguminous grasses as a precursor for cotton and as the main means of further increasing the fertility of irrigated soils. The gross output of raw cotton in the USSR will increase by 2-3 times. On the basis of irrigated crops of perennial grasses, there is the possibility of widespread development of livestock, the

direction of which is determined by the need to supply the population of industrial centres with dairy products and meat. Agriculture and animal husbandry of Turkmenistan in a short time (5-7 years) will make a giant leap.

“The expansion of irrigated and irrigated areas will make it possible to additionally produce 3 million tons of raw cotton per year, which is more than one third of the average annual cotton production in the USA, half a billion pounds of wheat, 30 million pounds of rice and 6 million tons of sugar beets. The number of cattle in these areas will increase by 2 million heads and sheep by 9 million.”

The enlarged collective farms will build thousands of new towns and cities, tens of thousands of enterprises. New cadres of technical intelligentsia will grow up, more and more the difference between city and village, between physical and mental labour will disappear.

The task of transforming and developing deserts should not be limited only to agriculture. The most important mineral deposits are geographically related to deserts. So, a significant part of the world's oil deposits gravitate toward the belt of steppes and deserts. The raw material base of many branches of the chemical industry, in particular the extraction of natural soda, nitrate and sulphate, sulphur, iodine, boron, bromine, is associated with the territories of steppes and deserts. The richest deposits of ferrous and non-ferrous metals, coal and phosphorites are located on the territory of anhydrous deserts. Irrigation and watering of deserts and steppes will significantly develop industry in these areas.

With the help of solar technology and wind turbines, solar and wind energy, which is uselessly lost in the desert, will be used.

The steppe cities of the arid Southeast, the port cities of the Caspian, the oil and chemical industry of Turkmenistan, the livestock breeding of the waterless sandy deserts of the

Caspian Sea and Kara-Kum, the steppes of Ukraine and Crimea will receive precious fresh water in abundance.

F. Engels wrote that for the regulation of natural processes, a simple knowledge of the laws of nature is not enough. For this, "... requires more than simple cognition. This requires a complete revolution in our current mode of production and, together with it, in our entire social system ... Individuals who dominate production and exchange capitalists can only care about the most immediate beneficial effects of their actions. Moreover, even this very useful effect—since it is about the usefulness of the produced or exchanged goods — recedes completely into the background, and the only driving spring becomes profit on sale."

The Great October Socialist Revolution brought about a complete coup in our country. The victory of the Soviet socialist system opened up unprecedented opportunities for a directed change in natural processes.

Soviet science faced the challenge of fundamentally changing adverse environmental conditions, transforming nature, appropriate management of laws in force in nature, and on this basis - consciously preventing any possibility of adverse processes and consequences that could be significant for future generations.

The whole power of the creative enthusiasm of Soviet man, the whole power of the socialist industry and domestic science, is directed to the struggle against the elements of nature by the genius of I.V. Stalin. 5-7 years will pass, and the plans of our great leader will translate into majestic hydraulic structures on the Volga and Dnieper, on Amu-Darya and Don, in new unlimited flowering fields and forests created in the steppes and deserts!

The crowning goal of the Stalinist plan for the transformation of nature is the great humanity task - to ensure universal material abundance and comprehensive, full

satisfaction of the needs of people in a communist society, freeing them from the burden of hard physical labour and from the catastrophic effects of the elements of the desert and drought.

The powerlessness of capitalism in mastering the elements of nature

The capitalist world, with its class contradictions tearing apart, destructive wars, crises and the anarchy of production, could not pose and solve the problem of the systematic mastery of the elemental forces of nature.

Numerous ancient irrigation facilities created by the centuries-old work of the peoples of Central Asia, India, China, South America, were destroyed more than once as a result of bloody wars. The densely populated in the past oases of the Libyan Desert, Sahara and other territories of North Africa, producing a lot of food and raw materials, fell into disrepair after being captured by the British, French, Belgian and other imperialists. The causes of the death of vast, once irrigated and populated territories, ancient cities and oases are not rooted in the natural-historical processes of “drying up of Asia” and not in the “offensive of the Sands of the Sahara”, but in the very nature of the capitalist mode of production.

The agriculture of the capitalist and colonial countries is characterized by a chronic lag and depression caused by the outflow of capital in the industry in pursuit of the highest profits. The state of depression in the development of capitalist agriculture makes it impossible to fully and consistently apply modern achievements of science and technology.

Private ownership of land, the dependence of the composition of crops and the area under them on market conditions and periodic crises lead to predatory use of land. The soil is cultivated without proper crop rotation, without considering its position in the landscape, at the whim

of an individual owner, without any assessment of the consequences that will result from such use.

The lack of proper crop rotation destroys the agronomically valuable soil structure, worsens its physical and chemical properties, and contributes to the development of soil erosion and blowing. The opposition between town and country leads to a systematic depletion—"robbery" of the soil by irreversible alienation of the enormous masses of mineral and organic substances from the fields to industrial centres, which violates the normal metabolism in nature.

The inability to implement rational agricultural technology and preventive measures that support high soil fertility leads to the death of fertile soils in vast territories.

K. Marx proved that capitalist agriculture is incompatible with science and the perfect methods of using the soil. "The moral of the story, which can also be extracted by looking at agriculture from a different perspective, is that the capitalist system is contrary to rational agriculture, or that rational farming is incompatible with the capitalist system ..."

American propaganda spreads false information that large-scale US capitalist agriculture provides the opportunity to protect and develop fertile soils. This is not true.

As far back as 1867, K. Marx in *Capital* indicated the impossibility of rational use of soils under capitalism: "... any progress in capitalist agriculture is not only progress in the art of robbing the worker, but also in the art of robbing the soil, any progress in raising its fertility for a given period is at the same time progress in destroying the permanent sources of this fertility. The more famous a country, such as the United States of America, comes from large-scale industry as a hidden basis for its development, the faster this process of destruction ...

Capitalist production, therefore, develops technology and a combination of the social process of production only in such a

way that it undermines at the same time the sources of all wealth: land and workers. “

In the era of imperialism, the theft of natural wealth has intensified. The capitalist system of the period of imperialism, with its technical stagnation of agriculture and its constant depression, is not able to ensure the progressive development of agriculture. Moreover, the whole system of agriculture, oriented to the market, to profit, to economically unstable market conditions, leads to the fact that rational methods of agriculture in capitalist countries are impossible at all.

The English scientist D. Ressel in his book “Soil conditions and plant growth” wrote: “Congestion in cities and a huge reduction in transportation costs led in the 19th century to the introduction in new countries, especially in North America, of the most unprofitable of all well-known agricultural methods, continuous cultivation of the land without periodic changes in legumes and grass crops. Organic matter began to mineralize rapidly, leaching and erosion increased significantly after removal of the vegetation cover, while the constituent particles of the soil, slowly formed over centuries, soon decayed. Nothing returned to the soil, grain and other market products were sold, and straw was burned. The result was a degree of exhaustion unparalleled in old countries,

In modern conditions, the process of plundering natural resources, and especially soil fertility, in the USA has increased even more. Erosion and black storms have reached disaster in the United States.

Soil erosion in the United States over an area of more than 100 million acres. Bennett, an American specialist in soil erosion, unwittingly showed that the consequences of capitalist agriculture in the United States would have to be corrected by several generations.

The predatory use of soils in U.S. agriculture leads, in addition to flushing, also to widespread progressive depletion

of soils. This can be judged by the data of G. Yenny's book "Soil Formation Factors" published in 1941. The author notes that under the average conditions of US grain farming under the existing farming system (he considers it also predatory - exploitive.—V.K.) for the last 60 years there have been deeply negative changes in soils. The humus content compared to the original decreased by 38%, and the nitrogen content decreased by 42%. The absorption capacity and aggregation respectively decreased by 25 and 30%. Acidity increased by 25%, and the clay fraction increased by 40%. This process was accompanied by a significant decrease in soil fertility and plant productivity. This is convincingly confirmed by figures showing a decrease in wheat yields in the United States. During the period from 1913 to 1937, wheat productivity decreased by 34%.

Progressive American literature paints a terrible picture of the impoverishment of US farming due to the ruin of large capitalists, as well as due to the loss of land fertility caused by predatory farming.

Carey Mac-Williams in the book "Poor Land" (1949) indicates the cause of the death of soils: "Local pastures were ploughed and sown with wheat. Farmers did not fertilize the soil at all and did not even dig wells. After one or two good wheat crops, the land was already depleted." "They cultivated the land for several years, hoping to harvest a good harvest every year, until finally the surface layer of the earth turned into the finest powder."

A. Rochester, in his book "Why Farmers Are Poor," (1949), tells how excessive overloading of pastures leads to the death of grass stands, shrubs, and destruction of the soil cover. The pastures of the Great Plains grazed almost twice as many cattle than what they could feed without devastating consequences for the soil cover. The plains turned into deserts, captured by dust storms.

The average farmer cannot fight soil depletion. Approximately 500 thousand farmers in the USA are not able to provide food even to their own families due to the loss of soil fertility on their farms; droughts and shortfalls recur on average once every 3 years.

The reasons for the loss of soil fertility and the ruin of farming in the United States are, according to A. Roche, the lack of proper crop rotation, excessive exploitation of arable land, overgrazing, lack of a proper fertilizer system, soil loss of organic matter, soil erosion and water blowing during storms and etc.

“Poor farmers who sought to raise livelihoods,” writes L. Roche, “could not leave 1/2 or 1/3 of their land annually uncultivated, as required by proper crop rotation.”

To date, soil cover over vast areas from Montana and Dakota to Texas has been destroyed. In the same situation are the lands of the states of Kansas, Colorado, New Mexico, Oklahoma, where the soil cover is demolished, farm buildings and gardens are covered with sand and dust.

Hundreds of thousands of farmers were ravaged and left with their families without work and shelter. In the United States, 2 million people - the so-called “agricultural migrants” - are wandering, trying to find work and somehow return to agriculture. The movement of hundreds of thousands of homeless farmers, along with their wives, children, the elderly on the roads of the United States, “resembles a terrible nightmare,” writes Mc Williams.

The US government is trying to solve the agricultural issue by reducing the sown area, reducing the farmers' production of wheat, cotton, corn, rice, tobacco. For a reduction in production, farmers are promised a premium; but thousands of tons of finished products are destroyed. And all this happens at a time when millions of people need food! In the USA, more

than 35% of the population is malnourished, and in some years—80%.

During the period from 1940 to 1945, the total number of farms in the United States decreased by 215.9 thousand, and the number of large farms producing mainly for the market increased by only 6.8 thousand.

The area under crops in the USA decreased in 1950 compared with 1949: cereals—by 19.5%, cotton—by 31.3%, etc.

The noted phenomena are also typical for irrigated agriculture in the USA. The bulk of the cost of irrigation land reclamation in the United States rests with the farmers. Capitalist firms, guided primarily by the interests of profit, build irrigation systems and structures on them extremely poorly.

The construction of a number of irrigation systems was not completed due to lack of funds. Farmers who settled on these lands in the hope of irrigation, were forced to move to other places.

Built in 1900-1904 in the south of the USA, the All-American channel for irrigation served an area of 27 thousand ha. The channel was heavily flooded with silt. In 1905, during a flood on the Colorado River, the canal was completely destroyed, and river waters flooded for several years an area of 11,700 ha. Thousands of farms were destroyed and devastated. US irrigated agriculture is characterized by extremely slow development of land covered by irrigation facilities. According to American statistics, it is known that in 10-20 years after the completion of the construction of new irrigation systems, only 40-50% of the land is developed. Periodic sales crises do not provide the farmer with material opportunities for the implementation of radical land reclamation and their full sustainable development.

The scourge of irrigated agriculture in the United States is the secondary salinization of irrigated soils. In the forties, the area of secondary saline irrigated soils in the USA reached 20 million acres. 11 western states, including the irrigated territories of California, the states of Utah, Arizona, Nevada, and Colorado, were particularly affected. Many hundreds of farms went broke. This is due to the fact that large capitalist enterprises pursue primarily the interests of profit, and the average farmer himself cannot cope with secondary salt marshes caused by unplanned and irregular irrigation systems.

Capitalist firms in every way impede the development of new hydraulic engineering in the United States. Thus, railway companies are hindering measures that improve the development of water transport, owners of thermal power plants interfere with the construction of hydropower plants. It is well known that the “1000 richest Americans” led by Morgan for several years thwarted attempts to begin construction of hydraulic structures on the river. St. Lawrence. The predatory nature of capitalist agriculture, combined with slave labour, is particularly pronounced in colonial countries. Imperialism, shaken by the inevitable wars and crises, led to the disappearance of ancient oases of irrigation, the death of soils from salinization and to the depopulation of previously densely populated territories.

Soils formed over millennia with their fertility are destroyed by the capitalist method of farming for decades.

K. Marx wrote: “The result is that culture, if it develops spontaneously, and does not consciously go ... leaves behind a desert ...”

The appearance of imperialists in the countries of South America, in Africa or in Asia has always been accompanied by the seizure of the best from the number of developed lands, which became the property of the invaders. The mass impoverishment of the indigenous people of Peru, Mexico,

Brazil, South Africa, Sudan, India, Java, the Philippines and other countries who lost their land was accompanied by part extinction, part turning the survivors into slaves.

For colonizers, irrigation is a means of brutal exploitation for profit. Thus, the British for the use of water, 40% of the harvest are taken from the population of Sudan.

The vast expanses of land in India are not cultivated due to the destruction of irrigation and land reclamation facilities, while millions of peasants and workers are starving. The British colonialists “explain” the growing poverty and decline of the Indian economy by the Malthusian pseudo-theory of “overpopulation” and the unscientific assertion of low soil fertility.

The famous Communist Party of England, Palm Dutt, in his book, *India Today*, reports the terrifying facts of poverty and exploitation of the indigenous population by the English colonialists.

India holds the second place in the world in water energy reserves (27 million horse power), but only 3% of water resources are used in the country's national economy.

The ancient irrigation facilities in India are neglected or destroyed, the fertility of the lands of previously blooming oases falls due to waterlessness, salinization and waterlogging. Up to 70% of cultivable land is empty, but in fact the sown area is only about 53% of arable land. Crop yields are continuously falling. Over the past 15–20 years, wheat yields fell from 9 to 8 kg / ha, and rice from 17 to 11–8 kg / ha.

In the mid-thirties, the area of cultivated land decreased by another 2.5 million hectares; the area under food crops by 1940 decreased by 600 thousand ha. About 600 thousand people die every year in India due to hunger.

Hunger, high mortality and endless poverty have become a constant phenomenon - the “life” of India. For 50 years of the second half of the XIX century. according to P. Dutt, hunger in

India was repeated 24 times, and the number of people who died during this period due to hunger, according to official statistics, is more than 20 million people.

Karl Marx's words that he uttered about the destruction of ancient irrigation systems by the imperialists sound quite modern: "From time immemorial, there have been three branches of government in Asia: the financial department, or the department for robbing its own people, the military department, or the department for robbing neighbouring peoples, and finally, the department of public works ... And so the British took over the department of finance and the department of warriors from their predecessors, but they completely neglected the department of public works "(that is, works on land reclamation land, to develop and maintain the technical condition of irrigation facilities).

The invasion of US imperialists, the artificial partition of India, further worsened the economic situation of modern India.

A similar tragedy is experienced by the peoples of Egypt. Construction in the middle of the XIX century. The Suez Canal was the beginning of the complete economic enslavement of Egypt and its first transformation into a colony of France, and then England. Due to various financial speculations, the economy of Egypt by the end of the XIX century. was so confused and ruined that Egypt found itself in complete economic and political dependence on English capital. The degradation of irrigated agriculture in Egypt as a result of the management of the British colonialists can be judged by the figures for a continuous decrease in the cotton crop. At the end of the last century, the yield of peeled cotton reached 6.3 c / ha, and in the forties, the yield fell to 4.8 c / ha.

And although in 1939-1940. cotton yields have risen somewhat, in general, this level of yields cannot be compared

with the level of cotton yields on the irrigated lands of the Soviet Central Asian and Transcaucasian republics.

The main reason for the low and progressively falling cotton yields on the irrigated lands of Egypt is the continuous increase in salinity of irrigated soils, the inaccessibility of expensive mineral fertilizers to fellahs (peasants) and the inability to carry out drainage work—the main means of eliminating salinization of irrigated soils in the vicinity of salty groundwater.

The data of the Egyptian Ministry of Agriculture also indicate not only a decrease in cotton yields, but also a continuous deterioration in the quality of cotton fiber, as can be seen from the following figures (data for the period 1922-1937): by silkiness and fineness—by 16% by strength—26%, in length—by 11%.

The irrigation of Egypt is completely in the hands of foreign capitalists and serves as a means of enslaving and cruel exploitation of the fellahs. The best lands of Egypt are concentrated in the hands of foreigners. So, in the thirties, more than half of all irrigated land was concentrated in the hands of a few foreign companies, and the remaining area was distributed among millions of fellahs. For using water supply pumps, the landowner charges 5–10 times more from fellahs than it actually costs.

Having carried out land reclamation and drainage work on their lands, foreign owners lease these land to fellahs at fabulously high prices, buying up agricultural products for nothing (primarily cotton).

The management of the British in Egypt and India has led to the fact that on irrigated lands the secondary salinization of soils covers an area of up to 3.5 million hectares.

Here is what Ahmed Saad Kamel, the ambassador of the Egyptian people to the II Congress of Peace Supporters in Warsaw in 1950, said:

“For 70 years, Egypt has been under the yoke of imperialist domination. This is 70 years of disaster, ignorance and disease. 70 years of exploitation, oppression, terror. But these 70 years were also a period of constant struggle for our freedom and independence. The imperialists have turned our country into a huge agricultural base for supplying large Lancashire trusts with cheap cotton. As a result, our country has become a classic example of the lowest standard of living and overwhelming poverty. Frequent and various diseases are rampant in the country. Egypt has the highest infant mortality rate in the world; the average human life expectancy is one of the shortest in the world. “

In South Africa, the Anglo-Dutch colonialists, having robbed the fertile lands of the indigenous population (Negro-Bantu, etc.), drove him to the barren territories of the reservations or turned into his slaves, tenant-editors.

The book by W. Fitzgerald “Africa” says that three quarters of the total population of the Union of South Africa have only 0.1 land area. All the rest of the land is concentrated in the hands of a small handful of colonizers. The landless and disenfranchised Negro and coloured population of South Africa is dying, living in hunger and poverty. The ruined part of the landless “white poor”, comprising 0.1 white population, is degrading physically and mentally.

The European population leaves the vast rural areas of the Union of South Africa. Previously developed lands become a victim of erosion, are increasingly exposed to drought and lose fertility.

The powerlessness of the capitalist system in the fight against the elements of nature and the degradation of agriculture can be seen in Latin America, in particular Brazil. The indigenous population of Brazil was robbed by the Portuguese conquerors. For more than 400 years, there has been a process of predatory use of Brazil's natural resources,

first by the Portuguese, and then by the English and, especially, the American capitalists. During the XVIII century. Sugarcane culture declined. Hundreds of thousands of people went bankrupt and left the sugar regions.

In the XIX and XX centuries. the Brazilian economy was characterized by successive “booms” - cotton, coffee, and rice. However, just as consistently, under the influence of competition in the world market, droughts, and a decline in soil fertility, a decline in coffee culture, cotton growing, and rice sowing ensued. The collapse of rice planting occurred in the twentieth goals of our century.

Droughts, floods and soil infertility caused by the predatory use of forests, waters and fields have led to mass ruin, impoverishment of people and their flight to other places. The government’s attempt to develop irrigation, according to N. James in the book “Latin America,” was not successful. The washed away soils of coffee plantations, wetlands of rice culture, cotton lands that have lost fertility are abandoned, turned into deserts or, at best, pastures.

J. de Castro in his book “The Geography of Hunger” cites data that two-thirds of the population of Latin America are systematically starving, bankrupt or on the verge of bankruptcy.

Such is the shameful outcome of the “cultural” activities of the American and English “transformers of nature.”

Nowhere in the capitalist world are the ruling classes fighting desert elements. The imperialists spend enormous sums on the preparation and conduct of aggressive wars, and spend negligible amounts on the construction of irrigation systems.

A significant part of South Africa is occupied by the desert steppe of Kalahari. In the thirties, engineer Schwartz developed a project to use the waters of the Kipene and Tshobo rivers to irrigate the desert through the formation of a special

reservoir. The Schwartz project did not find any support or sources of funding.

Another project proposed the formation of a large body of water in northern Africa, which was supposed to create a humid subtropic climate in the Sahara. There was also a proposal to use groundwater for irrigation of the Sahara. Projects, without receiving any support, were not developed.

The British built the Assuan Dam on the Nile River only for irrigation, because they did not want to give Egypt electricity. As a result, the dam was built twice.

One of the most striking examples of the powerlessness of capitalism in the transformation of nature is the “boom” raised in 1946-1949. by the English government around a breeding plan for gigantic African peanut plantations. It was advertised that plantations were created on a ploughed 3.25 million acres. England was supposed to cover half of its fat requirements with this plan in 1950. In 1946, only 26 thousand acres were planted, and the peanut crop did not even cover the seed. Africa's transformation plan has failed.

“All the methods of production that existed so far,” F. Engels wrote in his classic work “Dialectics of Nature,” “had in mind only the achievement of the immediate, most immediate beneficial effects of labour. Further consequences, appearing only later and having an effect due to gradual repetition and accumulation, were completely not taken into account. “

Therefore, F. Engels wrote, it was indifferent to the Spanish planters in Cuba that the burning of forests on the mountain slopes, which made it possible for coffee plantations to be used only by one generation, led to destructive erosion and complete destruction of the soil cover. Since the capitalist mode of production primarily means profit, and only from this point of view they take into account the immediate effect of

economic activity on earth, it is not surprising that the long-term consequences of actions directed in this direction turn out to be of a completely different nature. for the most part the opposite.

F. Engels said that a pre-socialist society by its predatory nature cannot consciously direct the natural processes and consequences of its economic activities, the final results of which are often destructive.

In the XX century. The destructive consequences of predatory management under the capitalist mode of production became especially evident.

The ideologists of Anglo-American imperialism are trying to prove that the capitalist system is innocent of the calamities that the masses experience. To justify the thoroughly rotten capitalist system, the monstrous exploitation of the working people, wars of conquest for the sake of profit, to justify the powerlessness of capitalism in mastering the elements of nature, old, reactionary theories are being brought to light.

150 years ago, the English nobleman and pop Malthus sought to deceive the workers, explaining unemployment, illness, poverty and mortality among workers, allegedly too fast breeding and “irresistible laws of nature.” Malthus slandered, claiming that the world's population is growing faster than labour productivity in agriculture, and therefore people should inevitably lack food. Malthus recommended depriving workers of the right to marriage and family, depriving them of medical care and contributing to increased mortality.

Assessing the class essence of Malthusianism, K. Marx wrote about Malthus that he “... is not the husband of science, but a hired lawyer ... the shameless sycophant of the ruling classes.”

K. Marx accused Malthus of deliberately deceiving the English working class to please the ruling classes. The words

of K. Marx should now be fully attributed to one of the most terrible Malthusians - the American William Vogt, who published in 1948 a book called *The Way to Salvation*. Vogt's book is a typical example of the corruption and degradation of science in capitalist countries, its extreme fascization, an example of obscurantism and misanthropy of the pseudo-academic lackeys of capitalism serving Wall Street and its imperialist program. Vogt went far beyond Malthus. He frankly declares that the only way to save American imperialism from crisis and revolution is through the mass destruction of people through disease, famine, and war.

Vogt calls for the destruction of the population of India, China, Italy, Latin America and regrets that the population of Europe, despite the Second World War, increased over the decade by 11 million people. He sees "favourable prospects" in the fate of France, Chile, Tanganyika, where the process of population growth is slowed down, and high mortality is a "big advantage". Vogt in every possible way wishes for a repeat in China of devastating hunger strikes. An enemy of his own people, he demands a reduction in the US population from 140 million to 100 million.

The main thing in this misanthropic program is not only to maintain backwardness, lack of rights, poverty and high mortality in non-American countries, but also to lower the living conditions of the population of these countries in every way. Otherwise, Vogt scares, the growing population of India, China, Africa will begin to develop its industry and "become a threat to the whole world." By "the whole world," Vogt, of course, means the American-English colonialists.

For the countries of Europe and Latin America, Vogt puts forward the same program, offering to provide assistance to other countries only if they have state plans for stabilizing the population. This is a direct attempt by the "pundit" to use the food and technical resources of the United States to enslave the

peoples of the world, to turn them into obedient slaves working for scraps.

The American journal Saturday Evening Post wrote that William Vogt's book should be considered "the forerunner of President Truman's bold new program to help the backward peoples of the world." Soviet people understand what is hidden behind this "help." But Vogt is flattered that the program he developed to reduce the standard of living of the colonial countries has now become a program of the American government. He demands that in the countries "happy" with the care of the USA, the most primitive measures in the field of health should not be allowed, insisting on the need to increase mortality in these countries in order to break their resistance.

Operating fraudulently in the scientific categories of soil science, Vogt is trying to prove that the fertility of soils in agricultural crops is progressively and inevitably falling, that science and technology are not able to ensure the success of the fight against these processes, to overcome the negative phenomena in soils that are caused by human activities and According to Vogt, inevitably lead to the death of civilization.

According to Vogt, the absolute amount of arable land on the globe is very small and ranges from 1,400-1,600 million hectares, and the development of the land resources of the globe is almost supposedly completed. Vogt "proves" that the amount of arable land on the globe is continuously decreasing due to soil erosion and other adverse effects caused by agriculture, and the continuous population growth leads to the fact that in some countries the area of arable land is 0.08-0.02 ha per one person, and these countries cannot feed themselves. The countries of Europe, according to Vogt, live only by importing from the American mainland, whose lands perish, washing off into the Gulf of Mexico.

Vogt's statement about the completion of the land development process for land for agriculture is a shameless lie, designed for an ignorant reader.

The results of many years of research by the Soviet scientist academician L.I. Prasolov and his students on world land resources and the degree of their development show that mankind has huge reserves for the development of agriculture and the production of food and agricultural raw materials. So, the area of sown land along with orchards and vineyards are (in% of the area of the states):

England with dominions and colonies. . .	5.1
Including:	
- India.	30.1
- Canada.	2.4
- Australia.....	1.2
France with the colonies.	3.2
USA (together with Alaska). . .	14.0
China	8.2
Brazil	1.1

Even soil types such as chernozems and chernozem-like soils of prairies, which are the main base of grain farming, have been developed by no more than 30–35% of their area. Enormous reserves of undeveloped soils exist within all soil types, in particular among the soils of valleys, deciduous and coniferous forests, and especially among soils of the steppes, deserts, and tropics; almost completely undeveloped soils of mountainous countries, tundra.

The chains of capitalist property are sweeping the development of agriculture and the progressive development of new lands. But the experience of socialist agriculture in the USSR shows that the successful development of the lands of the North, semi-deserts and deserts, mountainous regions puts

at the disposal of mankind new tens and hundreds of thousands of hectares of fertile soil producing grain, flax, cotton, vegetables, fruits, wood. And in the future, humanity will have the opportunity to use the oceans and inland waters for these purposes, the fertility of which is still little used in the economy. The ocean and seas can produce valuable fodder algae, as well as large quantities of fish.

According to L. I. Prasolov, the percentage of agricultural use of soils, approximately calculated from the world soil map, the map of world agriculture and other materials, currently amounts to:

Soil types. . .	% agricultural use of land I whole
Soils of lowland areas	
Chernozems.....	35
Black soil of prairies.	29th
Gray podzolized soils of deciduous forests. . .	29th
Brown soil of deciduous forest.	26
Red soil subtropical forests.	thirteen
Alluvial soils.	12
Chestnut soils of dry steppes.	7
Black soil of dry tropical savannah.	7
Weakly leached soils of dry forests and bushes (“brown” soils).	6
Podzolic soils.	6
Red soil of rainforest.	4
Red-brown soil of the tropical savannah.	2
Serozem and other soils of desert steppes.	2
Soil of the tundra.	0
Soils of sandy and rocky deserts.....	0
Soils of mountainous areas	
Mountain forest brown soils.	8
Mountain forest red soils.	5

Mountain steppe soils.	4
Mountain forest podzolic soils.	2
Mountain meadow soils.	0
Mountain tundra soils.	0
Soils of alpine deserts.	twenty

Thus, Vogt's statement about the reached limit of land development on land is falsification of science, a caricature of scientific forecasts and poorly covered rehash of Nazi fascist propaganda about the lack of "living space", this time in relation to the goals of Anglo-Saxon aspirants for world domination.

Another false thesis of Vogt is the same false, pseudoscientific - about the "biological limit" of any territory. The fertility of existing arable soils, according to Vogt, is limited by the "biological limit", which Vogt is trying to explain by the concept of "territorial capacity", defined by it as the ratio of biological potential (fertility) to environmental resistance (needs and population).

Upon closer examination, the concepts of "biological limit" and "territorial capacity" are nothing more than a slightly transformed and made up modern scientific terminology pseudo-law of "diminishing soil fertility". This false law, originating from West, Malthus, Ricardo, Thunnen, was exposed by K. Marx in Capital when considering land rent issues.

In the work Essays on the Critique of Political Economy, F. Engels in 1844 wrote: "The productive forces at the disposal of mankind are immeasurable. Land productivity can be infinitely enhanced by the application of capital, labour and knowledge. " In particular, only land reclamation techniques known in the middle of the last century were able to increase the productivity of the soils, as Engels points out, six or more times.

In a letter to F. Engels dated January 7, 1851, K. Marx wrote that the development of society is accompanied by a general increase in the fertility of the land and the more universal the improvement of the land is, the more varieties of land it covers.

However, the irreconcilable contradictions inherent in the nature of the capitalist mode of production lead to the fact that the development of agriculture under capitalism undermines and plunders the fertility of the land, since rational agriculture is incompatible with the capitalist system of economy.

Bearing in mind agriculture based on the achievements of science and technology and freed from the chains of private ownership of land and means of production, that is, agriculture of socialism and communism, K. Marx wrote: "The land ... is constantly improving if it is treated properly".

V. I. Lenin waged an irreconcilable struggle against the reactionary pseudo-law of "diminishing soil fertility" raised to the shield by S. Bulgakov, E. David, P. Maslov.

V.I. Lenin completed the exposure of the false law of the decline in productivity of subsequent costs and showed its anti-science, reactionaryness and direct connection with the class interests of the bourgeoisie and landowners.

Bichuya Bulgakov, David and Maslov, V. I. Lenin proved that only the apologetics of the bourgeois system and stupidity are the content of the false law of "the decline in soil fertility." V.I. Lenin showed that the progressive development of science and technology, the use of new types of fertilizers, processing techniques, the development of animal husbandry create prospects for the endless development of labour productivity in agriculture. But this unlimited increase in agricultural productivity is possible only if it is completely revolutionary freed from remnants of feudalism and private ownership of land, which impede development and predetermine the backwardness of capitalist agriculture.

“The introduction of machines and improved production methods immeasurably facilitated this struggle in general,” wrote V. I. Lenin, referring to the struggle with nature, “and food production in particular. It was not the difficulty of food production that increased, but the difficulty of obtaining food for the worker — it increased because capitalist development inflated land rents and land prices, concentrated agriculture in the hands of large and small capitalists, concentrated even more machinery, tools, money, without which successful production is impossible . To explain this growing difficulty in the existence of workers by the fact that nature is cutting its gifts means becoming a bourgeois apologist. “

The words spoken by V.I. Lenin to Bulgakov can be fully attributed to Vogt and the like.

It is remarkable that Russian agrobiological science has always been progressive in this matter. K.A. Timiryazev, I.V. Michurin, V.R. Williams repeatedly repelled various Malthusian statements about the “limits” in agriculture, about the “stocks” of fertility, etc. K. A. Timiryazev pointed out that the development of chemistry, physics and physiology created the foundations of rational agriculture, made it possible to subjugate the nature of the plant and force it to give the person the necessary products in larger quantities and of better quality. Soil fertility is used by man in the process of agricultural labour. Along with the growth of the technical equipment of agriculture, as well as the investment of labour in soils, their fertility is growing.

The impossibility under the conditions of capitalism of a rational integrated impact on natural conditions and soil cover is the reason for the progressive robbery of soils in the era of capitalism, the development of processes of relative and absolute loss of soil fertility. Only the socialist system creates all the possibilities for a planned complex transformation of

nature, elimination of their negative properties in soils and growth of their fertility.

Vogt's pitiful claims that every territory has a limited narrow "biological potential" are a lie long exposed by prominent figures in our domestic agrobiological science. It is exposed also by the actual harvests received in the conditions of the Soviet Union. These crops were achieved in the USSR at a time when the grandiose Stalinist program for transforming nature through planting state forest belts, introducing grass crop rotation, i.e. widespread and widespread introduction of the Dokuchaev-Kostychev-Williams complex in the country, was just beginning to be implemented.

Not limited to the gloomy picture of the death of "civilization" painted by him, Vogt goes further, denying the possibility of combating erosion - this scourge of American agriculture under capitalism.

Vogt claims that soil leaching during cultivation is an inevitable phenomenon for agriculture in all countries and under all conditions.

The absurdity and deceitfulness of the thesis of the ubiquitous "inevitability of erosion" is refuted by the well-known processes of artificial mudding (soiling) of bog soils, an increase in the thickness of the soil layer on irrigated lands, an increase in the thickness of soil horizons in flood meadows and alluvial soils, and the absence of washouts on plains with slopes of less than 2° , as well as in the culture of drained swamps, etc.

By the works of V.V. Dokuchaev and V.R. Williams, the USSR developed a system of anti-erosion measures that are systematically being introduced into socialist agriculture in the general plan for transforming the nature of the USSR. But, of course, these measures are not feasible in a capitalist system. Fogg also claims that 630 mm of precipitation is not enough for crop production.

The experience of obtaining high yields of grain and beets in the conditions of the chernozem-steppe zone in the USSR (yields obtained in the Volga region by the Hero of Socialist Labour by collective farmer KI Dolgova and others), characterized by an annual precipitation of 350-450 mm, indicates that this the amount of moisture is sufficient when farming is carried out on the basis of socialist principles and agriculture is equipped with the latest technology, fertilizers and has the ability to apply the right agricultural technology, ensuring the accumulation and preservation of moisture in very well.

The point, of course, is not in soil erosion, not in dust storms and not in precipitation, but in the dominance of “business” and “private enterprise”, the expulsion of which from agriculture is possible only if the entire capitalist system is destroyed.

But no matter how Vogt tries, he cannot hide that capitalism is the main reason for the plunder and destruction of natural wealth and soil fertility.

Vogt’s misanthropic program fully complies with the demands of American imperialism and is adapted to facilitate the implementation of the plans of the American arsonists who seek world domination, enslavement of the peoples of the world and their robbery in the interests of American capitalists.

The task of Soviet agrobiologists and soil scientists is to consistently expose the deceit and scientific bankruptcy of modern Malthusianism, based on new attempts to rig the facts and distort the gains of progressive science, to hide from the public opinion of foreign countries the achievements of advanced science and socialist agriculture in the Soviet Union. An exceptional role in this struggle was played by the session held in August 1948 of the All-Union Academy of Agricultural Sciences named after V.I. Lenin, who exposed and defeated the reactionary mendelism-organism.

Soviet agrobiologists and soil scientists must, with all intransigence, oppose any manifestation of the “theories” of “eternity”, “immobility” and “static” soil types and phenomena, since these “theories” inevitably lead to pseudoscientific conclusions about “limits” and “limitedness” natural opportunities “,” conservatism of organic nature “,” biological potential “,” etc. Concepts about the “equilibrium” of soils, about their “slowing down “,” damping “development, the ultimate leaching of soils are used at this stage by vogs and similar gloom demons and inevitably find themselves in the ideological arsenal of modern imperialism.

Creative work with the entire Soviet people on the implementation of the Stalinist plan for the transformation of nature and on the scientific generalization of the best practices for obtaining high yields on collective farms and state farms, discovering and developing new methods for altering soils and improving their fertility, Soviet scientists contribute to creating an abundance of food products, the great cause of building communism in our country.

Soviet scientists—to the Stalinist construction projects of communism

The great goals of the Stalinist plan for the transformation of nature caused a powerful patriotic movement of the entire Soviet people. This movement is aimed at solving the most important task—to facilitate by all means the speedy implementation of the Stalin Plan.

From all over the country, construction organizations receive letters from Soviet citizens—collective farmers and workers, engineers and scientists who wish to participate in research and construction.

The largest plants in the country—Magnitogorsk, Kramatorsky, Hammer and Sickle, Electrosila, Uralmash, Kharkov and Stalingrad Tractors, Gorkovsky and Moscow Automobiles send their cargo to the great construction

sites. Factories in Moscow and the Urals are building heavy duty excavators and suction pumps. Leningrad produces powerful turbines. The trains arrive at the construction address from Moscow and Leningrad, Zaporozhye and the Baltic states, from Siberia and the Urals, from Uzbekistan, Armenia, and Kazakhstan. The enterprises of Yerevan, Tashkent, Kiev, Alma-Ata, Rostov and Donbass consider it a matter of honour to fulfill ahead of schedule the orders of the great communist construction projects and supply them with first-class products in quantities ensuring the completion of construction ahead of schedule.

A new stage in the research activity of Soviet scientists has begun, which is characterized by a further strengthening of cooperation between manufacturers, prospectors, builders, future exploiters and scientists.

The determination of the creative initiative of Soviet scientists is aimed at achieving the great goal of actively contributing to the solution of the tasks set by Comrade Stalin.

To assist the construction of communism at the USSR Academy of Sciences, a Committee has been established to promote the construction of hydroelectric power stations, canals and irrigation systems. Assistance committees were created at the academies of sciences of the Union republics and branches of the USSR Academy of Sciences, at universities, scientific societies, etc.

Assistance committees facilitate everyday cooperation, communication between scientists and practitioners, and the joint solution of the most important scientific and technical problems posed by the Stalin plan.

This social form of the patriotic movement of Soviet scientists provides the most appropriate concentration of forces of various institutions and departments on solving especially important issues, provides the fastest transfer for use in the

design, research and construction of scientific achievements that were obtained by Soviet science.

At the first stage of their activity, the assistance committees for Stalin's construction projects focused on the use and generalization of available scientific materials characterizing the natural and economic conditions of the Volga, Caspian, Volga, Don, southern Ukraine and Crimea regions, and Turkmenistan. Geologists, soil scientists, botanists have done a lot to mobilize and use the factual materials that are available at the USSR Academy of Sciences, universities, institutes and departments on the natural conditions of the territories of new buildings. At the disposal of designing organizations, to help prospectors in late 1950 and early 1951, various maps were transferred, information about building materials, engineering-geological, hydrogeological and soil conditions of these territories, land resources of different categories were calculated,

Recommended for use are fast methods for analysing the mineralogical and chemical composition of rocks, the chemical composition of river and groundwater, and ways to reduce the water permeability of soils and give them stability. Maps and monographs, popular brochures characterizing the natural and economic conditions of the territory of the great Stalinist buildings have been published and are being printed.

The most important task of assistance committees is to coordinate the scientific work of scientists from various departments and institutions around the main scientific problems. To this end, the Stalinist Construction Assistance Committee of the Academy of Sciences of the USSR, in close collaboration with the assistance committees of other scientific institutions of the country, prepared for 1951 a consolidated plan of scientific work by the USSR Academy of Sciences, MV Lomonosov Moscow State University and the Union

Academies of Sciences on the subject of, related to the implementation of the Stalin plan.

The master plan allows us to present the exceptional grandeur and diversity of the scientific work of scientists of the Soviet Union, aimed at facilitating the speedy implementation of Stalin's construction projects. The plan brings together more than 400 major topics, of which half is the share of the Academy of Sciences of the USSR, 70 are carried out by the Academy of Sciences of the Ukrainian SSR, 41 are the Academy of Sciences of the Uzbek SSR and the rest are academies of sciences of the Armenian, Byelorussian, Georgian, Kazakh, Latvian and Estonian SSRs. More than half of the planned scientific research is completed during 1951-1953. The largest part of the research work falls on the problems of technical, geological, and biological sciences.

A large number of problems are connected with methods for calculating strengths, calculating hydraulic structures and structures, calculating stress in hydraulic turbines, and the strength of rotors of turbogenerators. Here a whole complex of complex mathematical problems that arise in front of designing and building organizations is solved.

A significant place is occupied by the subject devoted to building materials. This topic combines the research of geologists and petrographs, engineers and chemists working to increase the resistance and durability of building materials, to protect structures from corrosion.

Among the scientific issues of energy, it is necessary to name the transmission of electricity at extra-high voltages over particularly long distances, the problems of the high-voltage network and the energy balance, the issues of electricity supply, electrical equipment, automation methods and telemechanization of powerful units of new hydroelectric power stations.

Methods are being developed for predicting the regime and chemical composition of groundwater over large areas, forecasts of the levels and effects of new reservoirs on adjacent land, forecasts of the regimes of rivers and balances of the Aral and Caspian Seas, forecasts of climatic changes, seismic conditions, etc. Forecast of the level of the Aral and Caspian Seas - One of the largest scientific issues that many scientists and designers are working on. This problem affects the diverse interests of the economy. The level of the Caspian Sea has decreased over the last geological period. There are proposals to create powerful dams in order to maintain the water level of the North Caspian, in order to preserve its fish wealth. The situation is different with the Aral Sea, which has increased its level over the last geological period.

A large place in scientific work is occupied by seismic issues, i.e., earthquake forecasts. Part of the southern regions of Turkmenistan is located in an area prone to earthquakes. However, the danger and strength of earthquakes are rapidly decreasing towards east and north. The problem of zoning the possibility of earthquakes is included in the work plan to help the Main Turkmen Canal, which will help solve the problem of the final tracing of the channel.

Large and diverse anti-seismic construction works have begun in cities and during the construction of hydraulic structures.

A special place is occupied with the problems associated with salts. The territory of the Caspian lowland—the drainless desert—is widely subject to the processes of modern natural salinization. Here at almost every step you can find salt lakes such as Elton and Baskunchak, dry salt accumulations, salt mud.

In the bowels of the earth's crust here you can find the so-called salt domes. These are huge, often several kilometres, accumulations of pure rock salt, which is squeezed by

geological forces in the earth's crust to the surface and sometimes breaks through the earth's crust in the form of a salt mountain. In the Caspian Sea, such hidden underground salt domes on average account for one for every 300 km. Salt domes consisting of pure rock salt release large amounts of salt into the ground and cause severe salinization of the surrounding area.

There are a number of questions that scientists must answer. When tracing large channels, is it necessary to bypass the location of salt domes so that the bed of the channel does not undergo deformation and harmful salts do not enter the water? How to use the salt fields of the Caspian Sea in the interests of the chemical industry?

The problem of salt control is also in Turkmenistan. The main Turkmen canal can be partially launched along the ancient channel of the Amu-Darya-Uzboy. Amu Darya here in the distant past had a runoff to the Caspian Sea. The bottom of the Uzboy was very well preserved, although the runoff of the Amu-Darya along the Uzboy channel stopped 2-3 thousand years ago. So it turned out a deep hollow. Uzboy played the role of a collector—a collector of salt solutions circulating in the Kara-Kum desert. As a result, the bed of the Uzboy was filled with a large amount of salts.

Designers and scientists have to solve a lot of various issues. How to transport Amu Darya waters along Uzboy and maintain high quality fresh water? Is it necessary to remove these salt masses and can they be used for the chemical industry? Is it advisable to dissolve these salt masses and dump them into the Caspian Sea, or to cover them with a waterproof layer of clay in order to isolate them and eliminate the possibility of dissolution? These issues are developed jointly by geologists, geochemists, engineers and chemists.

A huge volume in the work of scientific institutions is occupied by cartography and zoning of the territory of future

irrigation and irrigation. It combines the work of geographers, soil scientists, botanists, hydrogeologists. A series of detailed maps of environmental conditions will be compiled and zoning of the territory will be given to select the best land for new irrigation systems. Closely related to this are the scientific issues of land reclamation of sands, solonchaks, solonchaks, and takyrs. These issues will be resolved both by expeditionary and stationary methods.

A large group of topics is related to the development of elements of the grass field farming system in relation to the conditions of irrigated farming. Here, the issues of selecting components of grass crop rotation, sustainable forest species, and the acclimatization of new valuable agricultural subtropical plants for areas of south-west of Turkmenistan should be resolved. Here adjoin the tasks of raising and proper processing of the grass formation in order to create a solid structure of irrigated soils.

Extensive earthworks in large spaces will undoubtedly reveal a lot of new and unexpected for us in the field of archaeology. Therefore, the collection and protection of archaeological finds during earthworks for their subsequent study is organized. For example, archaeologists have a solution to this problem: for what reasons did one of the oldest oases of irrigated agriculture, the Messerian oasis, with its irrigation system, cease to exist in the southwestern part of Turkmenistan?

Extensive research work is carried out by geologists who provide engineering and geological justification for structures under construction. The development of oil and coal prospects, the search for building materials in the territories gravitating to the regions of Stalin's construction sites occupy a very large place in the research work of many organizations. In connection with the growth of electricity and fresh water resources, the question is about the wide development of the

chemical industry on the basis of Kara-Bogaz-Gol, Elton, Baskunchak, Sivash.

Geophysicists are working on very important issues related to climate change that will occur after the implementation of the great construction projects.

Scientific and design organizations are developing prospects for the economic development of the national economy of the territories of Stalin's construction sites, issues of the location of new cities, enterprises, ports, freight traffic and the location of highways, labour balance problems. Production organizations and research institutions are also engaged in the issues of complex mechanization of the construction of future irrigation and watering systems.

The history of irrigated agriculture goes into the distant past. Ancient irrigation systems were created on the basis of slave labour. The socialist state builds irrigation systems on the basis of free creative labour with the use of powerful mechanization. However, agricultural labour in irrigated agriculture is still extremely difficult. It includes a lot of such works, which are not in ordinary, irrigated agriculture.

Irrigation system brings mud from irrigation water. The fight against drifts of canals and irrigation systems by sludge is very difficult. In pre-revolutionary times, the fight against drifts was carried out by primitive means and was carried out through the brutal exploitation of the poor. Hundreds of people in winter, standing waist-deep in water, manually cleared the canals of drifts. Now this work is carried out by powerful excavators, floating dredgers. Nevertheless, the problem of protecting the canals from sediment and the mechanization of cleaning the irrigation network from the sludge brought by river water still needs to be further developed.

When watering, you need to distribute the irrigation water extremely evenly. Therefore, the soil should be very flat from the surface. In irrigated areas, you can see flat, like terraces,

surfaces of irrigated fields, striking with the art of their execution. Field alignment itself is called layout. In the past, planning work required heavy manual labour. Now there are bulldozers, graders, scrapers, which greatly facilitate this work. Planning work needs to be carried out on a vast territory. When watering, the soil surface is gradually deformed. Therefore, the layout of the fields must be repeated.

It is not enough to free the population of future irrigated lands from the hard work of planning. This can be done, on the one hand, by introducing new equipment into the irrigation system, for example, the sprinkling method (then the need for planning disappears); on the other hand, by further enriching irrigated agriculture with appropriate mechanisms, on which scientific and technological inventive thought is now working.

In cotton productivity, plant care is of paramount importance. Before the revolution, most cotton care work was carried out manually by the so-called ketmen (a kind of heavy hoe). In Soviet times, tractors and cultivators well adapted to the culture of cotton were invented, which perform this work, replacing, to a large extent, the manual labour of the ketman. But there is still further mechanization of work in the cotton fields. Even now, cotton fields require a lot of hard manual labour, from which it is necessary to free the collective farmer.

In the coming years, the process of technical reconstruction of irrigated agriculture is to be completed in order to radically reduce the need for manual labour and to fully provide Soviet irrigated agriculture with mechanisms. The development of socialist irrigated agriculture will continue on the basis of the broad mechanization of all types of agricultural work.

Preliminary experience conducted by the Academy of Sciences of the USSR at the Pakhta-Aral state farm showed that using Soviet machines correctly, it is now possible to

reduce labour costs by 2-3 times for growing and harvesting cotton.

The institutes of the USSR Academy of Sciences to help the great construction projects of communism have investigated and resolved many complex issues.

The Hydrochemical Institute has developed a new method for determining the destructive effect of water on concrete. The same institute compiled a forecast of salinity of the water of the Kuibyshev reservoir and the Volga river between the Kuibyshev and Stalingrad reservoirs, as well as below the Stalingrad reservoir.

The N. S. Kournikov Institute of General and Inorganic Chemistry completed the study of the composition of the rocks of the Mogutovaya Mountain and proved the possibility of using them for the construction of hydraulic structures.

The Institute of Oceanology has calculated the level of the Caspian Sea for a period of 15 years in advance. The same institute has drawn up a general scheme for regulating the level of the Caspian Sea.

The Energy Institute determined the structure and worked out the balance of the energy systems of the Centre and the Volga region, taking into account the most favourable distribution of electricity from the Kuibyshev and Stalingrad hydroelectric stations.

The Institute of Automation and Telemechanics has created a facility for the study of electrical machine excitation of hydrogenators. This installation allows you to improve the quality of generated electricity.

The section on the scientific development of electric welding and electrothermia of the USSR Academy of Sciences has developed the design of a butt welding machine for welding steel rods with a diameter of up to 100 mm

The Lighting Engineering Commission at the USSR Academy of Sciences assisted the construction of the

Tsimlyansk hydroelectric complex in the design of experimental lighting installations and the selection of lighting equipment for lighting construction sites.

In the development of scientific problems posed by the Stalin plan for the construction of magnificent hydroelectric power stations and new irrigation and watering systems, a large place belongs to scientists from the Union republics.

Large research teams from the Georgian and Armenian Academies of Sciences are developing energy and hydraulic engineering issues to help Stalin's construction sites.

The institutes of the Academy of Sciences of the Ukrainian SSR determined a rational type of spillway dam on soft soils, studied the hydrology of the lower reaches of the Dnieper River, the soil of future irrigation systems, the amount of evaporation from the water surface in the irrigation area of the south of the Ukrainian SSR. All these studies are necessary for the design of the Kakhovka hydroelectric complex and the South Ukrainian Canal.

Scientists at the Academy of Sciences of Belarus are introducing mechanisms developed by them for earthworks at the Stalinist construction sites of communism.

The Academies of Sciences of the Latvian and Estonian SSRs are working on obtaining new, especially resistant and valuable alloys and cements. The Academy of Sciences of the Latvian SSR has created the design of a new dredging projectile for making slits on sand rifts. A soil cultivator design has been developed on multi-pack excavators combined with a cooler. These designs are of great importance for reducing the cost and increasing the pace of work on the regulation of rivers and the construction of canals in a wide variety of conditions.

Scientists of the Academy of Sciences of the Uzbek SSR, in the order of fraternal assistance to Turkmenistan, are carrying out very large work on the study of the

hydrogeological and soil conditions of Turkmenistan and on the compilation of detailed soil and land reclamation maps.

Fraternal creative cooperation of scientists of the Academy of Sciences of the USSR and the Academy of Sciences of Kazakhstan makes it possible to solve important issues of irrigation, watering, the creation of agriculture and animal husbandry in the Caspian deserts.

The Georgian SSR Academy of Sciences proposed the construction of earthquake-resistant buildings, lightweight concrete and reinforced concrete floors, which will be used for the construction of structures in the area of the Main Turkmen Canal.

The branches of the Academy of Sciences of the USSR are also doing a lot of work to help speedily implement the Stalinist plan for the transformation of nature.

The fruitful work of the Kazan and Crimean branches of the USSR Academy of Sciences, whose activities are directly related to the territory of construction sites. The Kazan branch made a forecast for the spring flood of 1951 in the area of the Kuibyshev hydroelectric complex; this helped the builders to schedule events for the flood meeting. The Crimean branch completed the work on the characterization of geological conditions in a number of regions of the Crimea and the Kerch Peninsula. The builders were given information about the rocks of the Crimea with the determination of the possibility of using them as material for the construction of structures of the North Crimean Canal.

Research work on the problems of the Stalinist plan includes a variety of laboratory studies, computational work in classrooms, experiments on models and in production conditions, on construction sites, as well as on specially organized experimental fields and stations.

On a particularly large place in the scientific activities of the Academy of Naum of the USSR, Moscow and Leningrad

State Universities and the Academies of Sciences of the fraternal republics are scientific expeditions.

In the areas of Stalin's construction sites there are many large scientific and industrial expeditions. The great work done by topographers on the compilation of maps and plans needed by all researchers, designers and builders should be avenged. 22 expeditions are conducting research on the Main Turkmenian Canal. Among them are the comprehensive Aral-Caspian expedition of the USSR Academy of Sciences, the large expeditions of the Ministry of Geology and Hydroproject, the expedition of the Uzbek SSR Academy of Sciences. The results of the expeditions allow the designers of the Main Turkmen Canal to clarify many issues related to its route, as well as to distribute land masses for future irrigation and watering.

An extensive expedition of the USSR Academy of Sciences on the scientific problems of steppe afforestation, combining scientists from the USSR Academy of Sciences, Moscow University and the Kazakh SSR Academy of Sciences, works in the arid southeast of the USSR, covering the Lower Volga region and the Caspian deserts. This expedition carried out very important studies used to create state forest belts and to design irrigation and irrigation in the Caspian region.

Academy of Sciences of the Ukrainian SSR and design organizations of Ukraine. teams of scientific institutes of Kiev, Kharkov and Dnepropetrovsk conduct large geological, soil and reclamation studies of the territory of southern Ukraine. These materials are already used in the design.

The Crimean branch of the USSR Academy of Sciences, the Ministry of Agriculture of the USSR, and Leningrad scientific institutions conduct various expeditionary studies to help design the North Crimean Canal.

Scientific institutions of Rostov, Stalingrad, Novocheerkassk work on the problems of the Volga-Don.

Expeditions have grown into large scientific institutions of a complex type. Their activities are based on new organizational principles and new methods of scientific leadership. The subject of the expeditions covers the study of natural conditions, problems of technology, agricultural issues, economics and archaeology.

The expeditions have already compiled a variety of geological, engineering, soil maps, which are necessary for the design and construction of new irrigation and watering systems and the largest hydraulic structures.

The territory on which the activities of joint expeditions unfolds covers tens of millions of hectares and includes hundreds of detachments and parties.

The creative work of Soviet scientists on the problems of the Stalinist plan for transforming the nature of our country will not only provide significant and timely assistance in its implementation, but also usher in a new, brilliant stage in the development of all Soviet science. The community of workers in science and industry will blossom even brighter.

The scope of research and scientific work, design and construction, and the volume of work on the development of new structures and territories require a large number of specialists in different fields of knowledge. A large army of specialists will be needed when new irrigation systems are to be commissioned in vast territories, when it will be necessary to develop these territories by creating new plantations of tree species, plantations of cotton, rice, subtropical plants. A large number of irrigators, land reclamation technicians, engineers, agronomists, foresters will be needed. The task of scientists is to work hard on training personnel of various profiles.

Along with great construction projects, new people are also growing in our country—worthy builders of a communist society.

“Every day raises our people higher and higher,” said L. A. Zhdanov. “Today we are not what we were yesterday, and tomorrow we will not be what we were today.”

We are not the same Russians as we were before 1917, and Russia is not the same with us, and our character is not the same. We have changed and grown along with the greatest transformations that fundamentally changed the face of our country.”

The young worker is today the builder of the high-rise building of Moscow University, tomorrow - a student of this university and soon a specialist and scientist.

Participants in the great Stalinist construction projects of communism—the worker, agronomist, scientist—grow to the level of creators of the new world. Workers and collective farmers master the professions of mental labour, for without this it is impossible to carry out mass daily management of the new gigantic irrigation systems and the agricultural production of the communist tomorrow.

A design engineer and builder who creates unprecedented in the world of hydraulic structures, an agronomist, reclamation of badlands, grow into a generation of bright, outstanding scientists.

The whole Soviet country in creative enthusiasm began the construction of the greatest structures of our time, designed to change the natural conditions and immeasurably increase the productive forces of our country.

Extensive work has already been launched on the Stalingrad and Kakhovka constructions, along the route of the Main Turkmenian Canal, thousands of workers are arriving, countless cars, many steam locomotives, river vessels,

auxiliary aircraft, powerful excavators, dredgers and other mechanisms are being used.

The construction of the pit of the Kuibyshev hydroelectric power station, residential buildings, warehouses, roads, auxiliary enterprises is underway; preparation for the construction of the alluvial lintel has been completed.

The construction of the Volga-Don Canal is nearing completion and the irrigation of the first 100,000 hectares of arid lands of the Rostov steppes is being prepared in 1952.

The entire people of the Soviet country - from the worker and collective farmer to the engineer and scientist - are seized with the pathos of peaceful creative work.

At the turn of the half-century, which was completed in 1950, in the 34th year of Soviet power, our people, under the leadership of the leading scientist I.V. Stalin, entered a new stage in peaceful creative work and the building of a communist society.

Soviet science will justify the hopes placed on it by the great leader Comrade Stalin and our people. Soviet scientists will help equip our builders with the most effective, most advanced ways of constructing new hydraulic structures and irrigation systems.

In the great construction projects of communism, of which we are witnesses and participants, the whole world sees the realization and fulfillment of the dreams of progressive people about the creation of a communist society and the subjugation of the forces of nature for the benefit of man. Guided by the great Lenin-Stalin party, the Soviet people will devote all their strength to the quickest implementation of the majestic Stalinist plan for the transformation of nature.