WORKERS OF ALL COUNTRIES, UNITE!

Professor

V.A. KOVDA

Stalin Prize Winner

GREAT CONSTRUCTION WORKS OF COMMUNISM *and the* REMAKING OF NATURE

Publisher's Note

This edition is republished from the Foreign Languages Publishing House, Moscow 1953 edition. The original is a translation from the Russian of a pamphlet published in Moscow in 1951 and slightly revised in order to reflect progress made at the great construction projects in 1951 and 1952.

The author, Professor V.A. Kovda, Doctor of Geologo-Mineralogical Sciences, is a prominent soil and irrigation specialist whose researches have won him a Stalin Prize. Professor Kovda is vice-chairman of the committee set up by the Presidium of the Academy of Sciences of the USSR to coordinate research for the new hydroelectric stations, canals and irrigation systems.

FOREIGN LANGUAGES PUBLISHING HOUSE
MOSCOW 1953

THE NOVEMBER 8TH PUBLISHING HOUSE
OTTAWA 2023

CONTENTS

The Soviet people, led by the Party of Lenin and Stalin, successfully carried out the Stalin postwar five-year plan, achieving an impressive advance in every field of socialist economy and culture. (The USSR's industry, incidentally, fulfilled this five-year plan ahead of schedule, in four years and three months.) This outstanding victory in peaceful construction has inspired Soviet men and women to new labour efforts for the glory of our beloved Homeland.

A new stage in their inspired constructive endeavour has been opened up by the great civil developments begun at the initiative of Joseph Stalin, the leader of the peoples. These are the hydroelectric power projects on the Volga, the Amu Darya, the Dnieper and the Don rivers, and the irrigation schemes in the trans-Volga area, the Caspian and the Don steppes, along the lower reaches of the Amu Darya, in the Kara Kum Desert, in the southern districts of the Ukraine and in the northern districts of the Crimea. Stalin's plan for transforming the steppes and barren desert areas — a plan of genius — is one of the main

points in the grand program of building communism in our country.

The scale of the new power and irrigation developments has no parallel in history. That they have been undertaken simultaneously and will be completed in the space of a few years indicates the exceptionally high level attained by the Soviet Union's productive forces, the maturity of Soviet science and engineering. The giant projects illustrate once again the peaceful aspirations of the Soviet people, who are working to multiply the country's riches and further raise their living standard. The projects testify, moreover, to the superiority of socialism over outdated capitalism.

The imperialists of the United States, Britain and other countries are unable to draft and carry out such all-embracing projects for changing natural conditions. In the capitalist countries, huge budget appropriations are made not to combat the blind forces of nature, not to improve the life of the people, but to wage wars of aggression, as in Korea, Vietnam and Malaya, and to plot a war against the USSR and the people's democracies. The imperialist rulers place the burden of these tremendous war outlays upon the shoulders of the working masses, condemning them to poverty and suffering.

In the USSR — the country which is building communism — the Party of Lenin and Stalin and the Soviet government are doing everything possible to transform nature, to do away with the deserts, to attain a further big rise in agricultural productivity. The people

of the Soviet Union regard the great construction projects of communism as a nationwide effort in which they are vitally interested. And they are working all out to implement the plan drafted by the genius of Stalin.

A leading feature of the Stalin plan for remaking nature is its grand program to increase the country's power resources. During the first three Soviet decades our country advanced from eleventh place (the place occupied by Tsarist Russia on the eve of the revolution) to second in the world's power output, and to first place in Europe.

The giant hydroelectric stations to be built on the Volga, the Dnieper, the Don and the Amu Darya under the Stalin plan will in a short time (from five to seven years) raise the annual power output of the USSR by more than 22,000,000,000 kwh.

Electricity will become the main motive power in land transport services. It will also penetrate deeply into every phase of industrial and agricultural production as well as into the everyday life of the Soviet people.

Within the same brief period of five to seven years an integrated system of waterways will be created, linking the Baltic, White, Black, Azov, Caspian and Aral seas, and the basins of the Volga, Don, Dnieper, Amu Darya and Syr Darya rivers.

Irrigation systems are being built to serve a tremendous drought-afflicted area: more than 28,000,000 hectares[1] of crop and pasture

[1] One hectare equals 2.47 acres. — *Ed.*

lands. This land will produce valuable industrial and food crops, as well as fodder crops, giving a further impetus to livestock raising.

The grand projects outlined by Stalin's genius will form part of the material foundation of communist society and will make it possible to master the forces of nature in the USSR. The reclamation of huge desert and steppe areas and the conquest of drought in the grain-producing regions are schemes that follow logically from the whole of our country's previous progress. They answer the age-old dreams of the peoples of the USSR, dreams that are coming true in the era of the great Stalin.

1. THE EFFORTS OF RUSSIAN SCIENCE TO REMAKE NATURE

The peoples of Russia and Russian science have big services to their credit in developing and reclaiming steppe and desert areas. In Tsarist times, Russian and Ukrainian peasants, fleeing from the despotism of the landlords, migrated in search of freedom and land to the Don and Terek valleys, to the regions east of the Volga and the Urals, to the Crimean, Caspian and Kirghiz steppes, to the Semirechye area and the northern districts of Khoresm. To these places the Russian settlers brought efficient methods of cultivating the land. The Uzbek, Tajik, Turkmen and Azerbaijan peoples have behind them centuries of experience in building irrigation canals and oases in the deserts, and in obtaining high crop yields.

In the 15th century, the Russian merchant Afanasi Nikitin made a trip to India and wrote a noteworthy description of his long travels.

In the year 1697, Semyon Remezov compiled his "Map of All the Lands in the Arid and Inaccessible Stony Steppe." This map summed up everything then known about the Aral Sea region and the basins of the Amu Darya and Syr Darya rivers.

Beginning with the reign of Peter I (1672-1725), a series of big expeditions was undertaken to study the physical geography of the steppes and deserts in various parts of Russia and the neighbouring regions of Asiatic countries. The work of the 18th-century expeditions

was crowned, in 1745, with the compilation of a "General Map of the Russian Empire." For its time this was an outstanding geographical work; no other country in Europe could boast anything to equal it.

At the end of the 18th and the beginning of the 19th centuries, fuller and more accurate information about the steppes and deserts was furnished by the Russian geographers Pyotr Rychkov, Pyotr Pallas, Grigori Karelin, Ivan Lepekhin and Nikolai Danilevsky. In the second half of the 19th century, highly interesting expeditions were conducted by the noted Russian biologists Nikolai Severtsov and Ilya Borshchov.

Extensive investigations were made in that same period by Glukhovsky, an engineer, who was the first to suggest practical ways of diverting the Amu Darya River to the Caspian via the channel of the Uzboi River. He also advanced the idea of connecting the Baltic, Caspian and Aral seas. But the Tsar's officials were unable to comprehend Glukhovsky's ideas; they took him for a mad dreamer.

The studies by the prominent Russian geographers and geologists Ivan Mushketov, Nikolai Przhevalsky, Grigori Grum-Grzhimailo, Veniamin Semyonov of the Tian Shans, Lev Berg, Pyotr Kozlov and Academician Vladimir Obruchev furnished important data about the deserts of Asia, their natural riches and ways and means of developing them.

Special mention should be made of the work done by the Russian hydraulic engineer

Boris Morgunenkov, who drafted irrigation schemes for utilizing the waters of the Amu Darya, the Volga and the Dnieper.

Russia's progressive scientists always held that the forces of nature could and must be tamed to serve man and made to yield more food, raw materials and other riches.

One hundred and fifty years ago, at the height of the Great French Revolution, the English clergyman Malthus attempted to deceive the workers by claiming that unemployment, poverty, disease and mortality are due to what he called their excessively high birth rate and "insuperable laws of nature." Malthus distorted the truth when he said that the earth's population increases faster than the productivity of agriculture, and that hence food shortages are inevitable. He tried to convince the working people that they were poor not because they were being exploited and robbed by the rich but because they were multiplying too rapidly. He urged that working folk be prevented from marrying and having children, and that they be deprived of medical service so as to increase mortality. This false and abominable doctrine came to be known as Malthusianism.

In an appraisal of the class essence of Malthusianism, Karl Marx called Malthus "not a *man of science hut a hired advocate*, a defender of the interests of their (the people's — *V.K.*) enemies, a shameless sycophant of the ruling classes."

Marx accused Malthus of deliberately deceiving the English working class for the

benefit of the ruling classes:

"...For the sake of these interests he (Malthus — *V.K.*) *counterfeits* science."

Today Marx's words fully apply to William Vogt, an American, author of a book called *The Road to Survival*. This book is a base counterfeiting of science in the interests of those plotters of another world war, the American and British imperialists. Vogt goes much farther than Malthus. He bewails the fact that the world's population is growing extremely rapidly and calls for the wholesale extermination of human beings by ruthless exploitation, disease, famine and wars in order to save American imperialism from crisis and revolution.

The Malthusian claim that agricultural output cannot be increased is being propounded in our day as well, in order to deceive the peoples of the world and make them slaves of American imperialism.

This false doctrine of Malthusianism as well as the pessimistic assertions, subscribed to by scientists in Western Europe and America, that soil fertility inevitably diminishes and that the productivity of the land is restricted, have always been alien to Russian progressive science and have been categorically rejected by it.

Kliment Timiryazev (1843-1920), the great Russian scientist, the pride of Russian biology, always claimed that science and technique are capable of governing the life of plants and making them yield more and better products for man's needs. He ridiculed the Malthu-

sian thesis that man is powerless to combat the laws of nature. He set biology the goal of growing "two ears of wheat where one grew before," and he fought every manifestation of the reactionary trends implanted in agronomy by Malthusianism.

What Timiryazev demonstrated in his research is that thanks to the influence of science, the productivity of agricultural labour will increase progressively. He made a deep study of drought-resistance in plants and elaborated methods of combatting drought. He understood, however, that a revolution was needed to bring about the flowering of agriculture in Russia. From the very birth of the Soviet system, he launched upon broad political activity to develop a new system of farming free from the chains of private ownership.

"We cannot wait for favours from nature; we must wrest them from her" is the slogan that was advanced by the famous Russian scientist Ivan Michurin (1860-1935), the great remaker of nature. Michurin proved that man can make any type of plant or animal more productive.

Michurinist biology is thus anti-Malthusian. Its theoretical principles and its practical attainments refute the idealistic assertions that there are "limits" in agriculture. Michurinist biology opens up immense possibilities for increasing labour productivity in agriculture by transforming the nature of plants and animals.

The famous Russian climatologist Alexander Voeikov (1842-1916) repeatedly pointed

out that desert irrigation gives man a powerful lever for governing the life of plants and obtaining high crop yields. The climate of Russia could be improved, he said, by building various types of reservoirs, ponds and irrigation networks. He stressed the importance of measures to minimize useless evaporation from reservoirs and the soil, holding that before the water evaporates it should be absorbed by the roots of plants, and, by passing through the growing plant organisms, favourably affect the harvest yield. Voeikov emphasized the need to utilize liver water for large-scale irrigation and to plant trees around ponds and reservoirs.

What was for its time an outstanding plan for remaking the physical geography of Russia's steppe regions was worked out by the gifted Russian scientist Vasili Dokuchayev (1846-1903), the founder of modern soil science. This plan included the following: regulation of the flow of rivers and of ravine and gulley waters; the creation of a chain of tree-lined ponds in the gulleys and hollows; the planting of shelter belts to retain snow and the spring waters; the afforestation of sandy tracts and mounds; irrigation; improved methods of soil cultivation with a view to maximum conservation and utilization of moisture.

Dokuchayev's anti-drought program was not appreciated in Tsarist Russia, which was incapable of carrying out broad measures to transform the steppe areas.

Alexander Izmailsky (1851-1914), an eminent contemporary of Dokuchayev, drew up a

comprehensive plan of government measures to prevent drought in the black-earth regions of Russia. But Izmailsky knew very well that the conditions prevailing in Tsarist Russia offered but little promise for the realization of this plan. He was greatly distressed by the thought that "*far sooner than our steppes can be sufficiently watered and afforested by the forces of private enterprise, they will turn into barren desert*."

To combat drought in the steppes, Alexander Izmailsky recommended such measures as the building of ponds and reservoirs, snow retention, a maximum check on the surface flow of thaw waters, the planting of windbreaks, etc.

A major contribution to the fight against drought was made by the outstanding Russian soil scientist, Academician Vasili Williams (1863-1939). Williams assigned a cardinal role to the travopolye system of fanning, in which he included the planting of windbreaks and tree belts around ponds and reservoirs; afforestation of watersheds; travopolye crop rotation, which periodically ensures ploughlands a mixture of leguminous and herbaceous plants that enriches the soil with organic matter and mineral nutrients and gives the soil a water-resistant structure improving the water regimen of the area.

Vasili Williams discovered the law of the equivalency and irreplaceability of all the factors in the life of plants. This law tells us that by simultaneously and sufficiently meeting the plant's requirements of food, water, air,

light and warmth, we thereby create the possibility of progressively increasing soil fertility and obtaining high harvests.

Another leading Russian scientist, Academician Dmitri Pryanishnikov, the agrochemist, elaborated the theory of enriching the soil with nitrogen by planting legumes in a correct crop rotation. Also, he advanced a system of soil fertilization differentiated according to the country's various types of soils and economic-geographical factors. His research opened up huge vistas for increasing soil fertility by the application of chemicals and by planting grasses.

It is only under the Soviet system that the classical investigations of our country's scientists in the sphere of agrobiology, as well as their methods of transforming unfavourable natural conditions and increasing the fertility of the soil, have been brilliantly developed and broadly applied. The establishment of hundreds of experiment stations and institutes studying the development of new lands in various parts of the Soviet Union, and the organization of modernly-equipped collective farms and state farms have drawn millions of collective farmers, hundreds of thousands of agronomists and an army of scientists specializing in agronomy, land reclamation, soil research and agrobiology into the work of changing the face of the land. They are elaborating and developing the scientific heritage of Timiryazev, Michurin, Dokuchayev, Voeikov, Izmailsky, Williams and Pryanishnikov.

2. HOW THE SOVIET STATE IS FIGHTING DROUGHT AND RECLAIMING DESERTS

With their primitive equipment and primitive methods, the small-peasant farms of pre-revolutionary Russia were helpless to combat drought. For the peasant each drought spelled a crop failure and famine. As for the landlords and the kulaks, their big farms were better able to withstand drought, and they reaped profit from the peasants' misfortunes.

Because of the primitive, small-scale system of farming in pre-revolutionary Russia, the crop failures caused by drought were both frequent and disastrous.

Affected by drought were the central black-earth regions, and especially the Rostov and Stavropol steppes, the southern Ukraine and northern Crimea, and the areas along the Volga and Ural rivers. There were times when drought also spread to the forest zones of European Russia.

In the 18th century, Russia had 34 dry years, and in the 19th century, 40; the average was one dry year for every three normal years.

The extent of the damage caused by drought depends upon the social system, upon who owns the land, the farm machines, fertilizers and the harvest. Before the revolution the Russian peasant was completely at the mercy of nature's whims. Here is what Gleb Uspensky, the noted Russian writer, said about this in his sketches entitled *The Power of the Land:*

"Looking out of my window I see fields

scantily covered with snow, and slender green blades of inch-high wheat. These slender green blades wield full power over man, over the huge, bearded muzhik, powerful of arm and quick of foot. The blades may grow, but then again they may die; the land may be a kind mother or a wicked stepmother — how things will turn out, absolutely nobody knows. They will turn out as the land ordains; as the land disposes and is capable of disposing... And so, man is wholly in the power of those slender green blades. For only after almost a year, to the day, will they bring a slice of bread to the muzhik's table. But then again they may not, since they themselves are in the power of every cloudlet, every breeze, every sunray..."

A drought catastrophic for the workers and peasants of Russia was that of 1891, which caused a severe famine. In 1911 there was also an acute drought; Lenin, discussing it in his article *The Famine and the Black Duma*, wrote that 20,000,000 of Russia's population were swollen from starvation.

The Prague Conference of the Russian Social-Democratic Labour Party, held in 1912, especially noted that "the starvation of 20,000,000 peasants in Russia shows once again the absolutely intolerable... oppressed status of the poor peasant masses..."

Lenin pointed out that the small-peasant farms were defenceless both against natural calamities and robbery by the landlords and capitalists. He wrote: "...A new vampire — capital — is advancing on the Russian peasants at a time when they are bound hand and

foot by the feudal landlords, and by the feudal, landlord Tsarist autocracy. Robbed by the landlords, crushed by the arbitrary rule of officials, enmeshed in the web of police prohibitions, abuses and coercion, shackled by the new watchdogs, the constabulary, priests and Zemstvo chiefs, the peasants are as helpless against natural calamities and against capital as are the savages of Africa."

By overthrowing the rule of the landlords and capitalists and establishing the new Soviet social system in our country, the Great October Socialist Revolution brought about a fundamental change in the life of the masses. The Soviet system opened up full scope for developing productive forces and remaking nature in the interests of the working people.

In accordance with ideas outlined by Lenin and Stalin, ever since its foundation the Soviet government has been carrying out extensive drought-prevention projects.

The program of the Bolshevik Party adopted at its Eighth Congress in 1919 states that the Party will work in every way to effect a wide system of land reclamation. In the difficult year 1918, the Council of People's Commissars took a decision to allocate 50,000,000 rubles for irrigation work in Turkestan.

In a letter to the communists of the Caucasus in 1921, Lenin pointed out the following: "Irrigation is most of all necessary and will most of all revive the region, regenerate it, will bury the past and make the transition to socialism more certain."

Comrade Stalin, in his report on *The Cur-*

rent Tasks of Communism in Georgia and Transcaucasia in July 1921, especially stressed the need for Soviet Georgia, Soviet Armenia and Soviet Azerbaijan to unite their efforts for joint land reclamation (irrigation, drainage), etc.

In 1924, Comrade Stalin proposed a broad plan for transforming the arid semidesert steppes and deserts in the southeast of the USSR through irrigation and reclamation, the object being to eliminate drought. He wrote:

"We have decided to make use of the peasantry's heightened readiness to do everything possible to protect themselves against drought hazards *in future,* and we shall use this readiness fully in order to carry out (together with the peasantry) decisive measures in reclamation, improvement of agricultural methods, and so on. We think of *beginning* the work by forming, as a minimum requirement, a reclamation wedge in the Samara-Saratov-Tsaritsyn-Astrakhan-Stavropol zone... This will mark the beginning of a revolution in our agriculture."

At the 17th Congress of the Communist Party of the Soviet Union, Comrade Stalin emphasized the necessity of speedy development of irrigation work in the trans-Volga region, considering this to be the main weapon against drought. He said:

"...We must not allow the matter of irrigating the trans-Volga regions — the most important thing in combating drought — to be indefinitely postponed."

Comrade Stalin went on to say:

A section of the Stalin Great Ferghana Canal in the Central Asian Republic of Uzbekistan

"...We cannot do without a large and absolutely stable grain base on the Volga which shall be independent of the vagaries of the weather and which shall provide annually about 200,000,000 poods[1] of grain for the market. This is absolutely necessary, in view of the growth of the towns on the Volga, on the one hand, and of the possibility of all sorts of complications in the sphere of international relations, on the other.

"The task is to set to work seriously to organize the irrigation of the trans-Volga regions."

A factor of decisive importance in combating drought is the collectivization of agriculture in the USSR, as a result of which tens of millions of small individual peasant farms have been turned into big collective farms

[1] One pood equals 16 kg or 36 lbs. — *Ed.*

equipped with modern machinery and capable of applying modern scientific achievements according to plan.

Thanks to the socialist industrialization of the Soviet Union, as well as to collectivization, agriculture was freed from the fetters of private property and provided with machines and fertilizers, as well as with highly-skilled agronomists. The Soviet Union embarked upon the systematic improvement of the ancient oases of irrigation farming. Soviet engineers and agronomists introduced many new methods into irrigation farming in Central Asia and Transcaucasia.

Between 1924 and 1942, the Soviet state invested about 6,000,000,000 rubles in reclamation and irrigation work as against the 100,000,000 rubles invested in pre-revolutionary Russia between 1867 and 1917.

In 192,8 the Soviet Union had some 4,200,000 hectares under irrigation. By 1951, the area had grown to approximately 6,500,000 hectares. In the first three Soviet decades, large new irrigation systems were built in Uzbekistan, Kazakhstan, Tajikistan, Azerbaijan, Armenia, the Volga area, the Terek Valley and southern Siberia.

In 1939, the Stalin Great Ferghana Canal, nearly 350 km long, was built. Today the rich collective farms of the Ferghana Valley, the Tashkent oasis, Samarkand, the Vakhsh Valley and western Azerbaijan are known throughout the land, as are the Pakhta-Aral, Bayaut, Kara Chala and other state farms. Here the yields of grapes, cotton, sesame and

apricots are fabulous, richly rewarding the labour of Soviet men and women.

A comprehensive system of measures has been employed in the steppe regions of the USSR to minimize the effects of drought: deep ploughing with the aid of up-to-date farm machines, snow retention, weed elimination, and wide application of fertilizer, with proper crop rotation. By 1941, field windbreaks had been planted on an area of 435,600 hectares.

Gradually the droughts have decreased in number and their disastrous effects have been weakened. The severe drought of 1946 was weakened to a considerable degree: with the help of the socialist state the collective farms rapidly eliminated the consequences of this drought which under other conditions would have been a great calamity.

The achievements of Michurinist biology, which enable the Soviet people to govern the nature of plants, have given them tremendous potentialities for transforming the steppes and deserts.

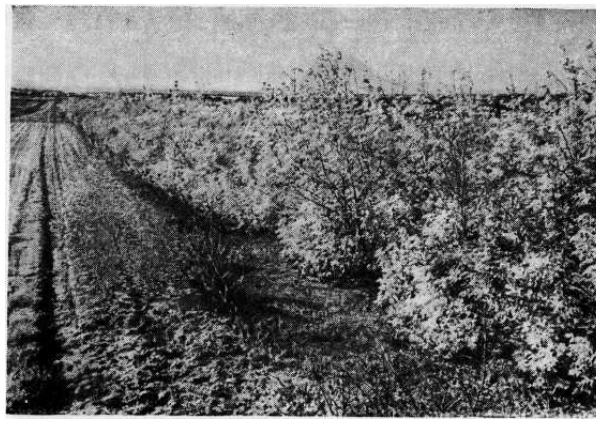
Socialist agriculture refutes the modern Malthusians (Voigt, Light and others), who maintain that man's living standards will inevitably drop and civilization perish owing to diminishing soil fertility and limited land resources. The leading men and women of socialist agriculture in the USSR obtain exceptionally high yields: between 12 and 15.5 metric tons of cotton per hectare, 150 tons of sugar beet, from 8 to 10 tons of wheat, 22 tons of millet, 16 tons of rice, 20 tons of maize, more than three and a half tons of flax fibre.

These yields are from 10 to 15 times higher than the average good harvests known in the past and testify to further great possibilities for a general rise in soil fertility and crop yields in socialist agriculture.

Agriculture in the Soviet Union is distinguished for a remarkably high rate of general development. Pre-revolutionary Russia produced no more than 4,000,000,000 to 5,000,000,000 poods of grain a year. In 1950, the grain crop in the USSR amounted to 7,600,000,000 poods. In 1913, Tsarist Russia harvested 700,000 tons of cotton; in 1940 the crop was four times as large — 2,700,000 tons — and in 1950 it was 40 per cent greater than prewar.

The rise in crop yields in the USSR is a direct result, primarily, of the deep-going changes in the social nature of agriculture itself and in its technical equipment; it is a result of 20-25 million individual peasant farms having joined into large, machine-equipped, highly-productive collective farms.

Under the leadership of the Bolshevik Party, a broad and varied system of measures has been carried out in the Soviet years to improve the technical equipment of socialist agriculture, increase its ability to withstand the blind forces of nature, and ensure a further rise in labour productivity in farming. Windbreaks have been planted on an area of 1,300,000 hectares by the collective farms and thousands of ponds and reservoirs built. Irrigation is widely employed by collective farms in the black-earth plains. Correct travopolye



Shelter belt in Novo-Annensky District, Stalingrad Region. Planted in 1940

crop rotations are being introduced; the farms are supplied with sufficient fertilizer.

First-class ploughs, tractors and harvesters are employed in socialist agriculture. The collective farms and state farms are headed by capable men and women, the majority of whom have an agricultural education and extensive practical experience. All this ensures a further rise in crop yields and gross harvests.

It should be emphasized that higher crop yields on the collective and state farms, as well as a remarkable increase in gross harvests, were already attained before the new stage in agriculture set in, the stage of large-scale fulfilment of the Stalin plan for remaking nature in the forest-steppe, steppe and desert regions of the USSR.

The years of the flowering of socialist agriculture have been accompanied by the de-

velopment of Soviet agronomy, by the solution of many scientific problems connected with the improvement of poor soils and the fight against the blind forces of the desert. For example, measures to anchor sands of various types may be considered fully elaborated and ready for large-scale application. Successful experiments in sand anchorage over big areas have been carried on for decades along the Don and the Dnieper, in the Caspian and Aral areas, and in the Kara Kum and Kzyl Kum deserts. More than 200,000 hectares of sands which in the past were advancing on cultivated land have now been anchored.

Plantations of trees from 10 to 20 years old form a tent over these sands.

The problem of reclaiming the malignant solonchak soils found in the deserts of the Caspian area, in Transcaucasia and in Central Asia has been solved. The 20-year experience of the Muganskaya Reclamation Experiment Station in Azerbaijan has shown that by a system of deep drainage and washing, efficient irrigation and correct farming methods the most malignant solonchak soils, containing from 3 to 5 per cent harmful chlorides and sulphates, can be reclaimed in a short time (from 2 to 3 years), after which high and stable yields of grain (from 4 to 4.5 tons per hectare), cotton (from 3.5 to 4 tons per hectare), etc. can be obtained.

Other reclamation experiment stations have similar achievements in reclaiming solonchak soils and planting them to cotton and sugar beet in the Hungry Steppe, the Ferg-

hana Valley (the Fedchenkovskaya station) and Kirghizia (the Kantskaya station).

In the country's big irrigated oases, where in the past excessive amounts of salts tended to accumulate in the soil, a large subsurface drainage network has been built in the Soviet years. This network drains off the soil salts and the saline subsoil waters, thereby preventing the accumulation of salts on the irrigated lands.

In these same years a drainage system tens of thousands of kilometres long has been built on the irrigated lands in Transcaucasia and Central Asia. This is a big achievement of socialist agriculture in the reclamation and development of solonchak lands.

The problem of reclaiming and farming solonetz soils has been solved. Research institutions of the Academy of Sciences of the USSR and the Academy of Sciences of the Ukrainian SSR, as well as experiment stations in the Ukraine, the Volga area and Siberia have demonstrated that gypsum treatment combined with crop rotation and modern farming methods can turn the solonetz soils into fertile fields capable of yielding stable harvests of grains, cotton, sugar beet and grass crops. Gypsum treatment is especially effective where the land is irrigated. A decision adopted by the Council of Ministers of the USSR on April 19, 1949, provided for the gypsum treatment of some 300,000 hectares of solonetz soils in the Ukraine during the next five years.

In addition to desert irrigation the Soviet

Union has embarked upon broad industrial development of the natural wealth of the deserts. The raw material supply bases of many branches of the chemical industry, in particular the production of soda, sulphates, iodine, boron and bromine, are located in steppe and desert areas. Rich desert deposits of ferrous and nonferrous metals, coal and phosphorites are being widely developed. The future holds promise of a further and still more rapid growth of industry in these areas.

In July 1947, the Council of Ministers of the USSR adopted a decision to organize irrigation over an area of 575,000 hectares in the collective farms of the central black-earth regions. Each collective farm in these regions is to have from 5 to 10 per cent of its area under irrigation. This will permit the farms to raise from 3 to 4 tons of grain per hectare regardless of the weather. They will thus be able to meet their own requirements and fulfil their obligations to the state no matter what the meteorological conditions. Such irrigated sections are being rapidly developed and thousands of ponds and pumping installations are being built. The work is scheduled to be completed in 1953.

On October 20, 1948, the Council of Ministers and the Central Committee of the Communist Party adopted the historic "Plan for the Planting of Shelter Belts, Introduction of Travopolye Crop Rotations and Building of Ponds and Reservoirs in Order to Ensure High and Stable Harvests in the Steppe and Forest-Steppe Areas of the European Part of

the USSR." Under this plan, within the next 15 years travopolye crop rotations are to be introduced everywhere on the territory of the forest-steppe and steppe regions of the European part of the USSR, shelter belts are to be planted over an area of 5,709,000 hectares and 44,000 ponds are to be built.

The following comparison will give an idea of the scope and speed of the work: In the United States nine years were required to plant shelter belts on a territory of 30,000 hectares; this was an average of 3,300 hectares a year. In the USSR shelter belts are to be planted over a territory of 5,700,000 hectares in 15 years, i.e., an average of 380,000 hectares a year.

Of especial importance in this system of measures is the creation of eight state shelter belts stretching thousands of kilometres from north to south along the watersheds and some of the country's biggest rivers. These huge windbreaks lying in the path of the hot dry winds will protect the chief grain areas from drought.

The year 1950 will go down in the history of our country as the year when the Council of Ministers adopted five decisions of paramount significance in transforming the arid steppes and deserts.

Under these decisions huge hydroelectric stations are being built on the Volga, Dnieper, Amu Darya and Don rivers. Construction of these stations, which will add more than 22,000,000,000 kwh to the country's annual power output, is to be completed between 1955

and 1957. Simultaneously, new irrigation systems are being built to serve an area of some 28,000,000 hectares in the arid and semidesert regions along the Volga and the Don, in the southern Ukraine and the northern Crimea, and in the deserts bordering on the Caspian Sea, in Turkmenia and Kara Kalpakia.

Never before in history have irrigation systems been built over such a large territory in such a short time (five to seven years). Indeed, in the many thousands of years of man's existence a total area of only 75,000,000 to 80,000,000 hectares has been brought under irrigation.

The 1950 decisions of the Council of Ministers have shown the whole world the gigantic scope of the Stalin plan for remaking nature, for creating an abundance of agricultural produce and developing the productive forces of the Soviet socialist state.

The construction of the giant hydropower stations, irrigation systems and state shelter belts has fired the hearts and imagination of the entire Soviet people, for they are part of the great Stalin plan of building communism in our country.

3. VOLGA POWER STATIONS — THE WORLD'S LARGEST

The Volga, the biggest river in Europe, is practically an inexhaustible source of electric energy for the economy of the Soviet Union. Under the Stalin plan, a hydroelectric station is being built on the Volga, near the city of Kuibyshev, with a capacity of about 2,000,000 kw. It will generate about 10,000,000,000 kwh of electricity annually, which is one and a half times the output of all the stations envisaged by the GOELRO Plan[1] and four times that of the Dnieper Hydroelectric Station. Of this output, 6,100,000,000 kwh will be delivered to the central district — to Moscow — 2,400,000,000 kwh will go for the needs of industrial development in Kuibyshev and Saratov regions, and 1,500,000,000 kwh will be used for irrigation purposes.

The transfer of electric power from the Kuibyshev station to Moscow will be effected over a distance of more than 800 km along transmission lines operating at the high pressure of 400,000 volts. Even in the United States, the biggest capitalist country, the longest transmission line is no more than 430 km, operating at 287,000 volts.

Power supplied by the Kuibyshev plant will be used to irrigate 1,000,000 hectares of land in Kuibyshev and Saratov regions and

---

[1] The first plan for the economic development of Soviet Russia on the basis of electrification. It was adopted at Lenin's initiative in 1920. — *Ed.*

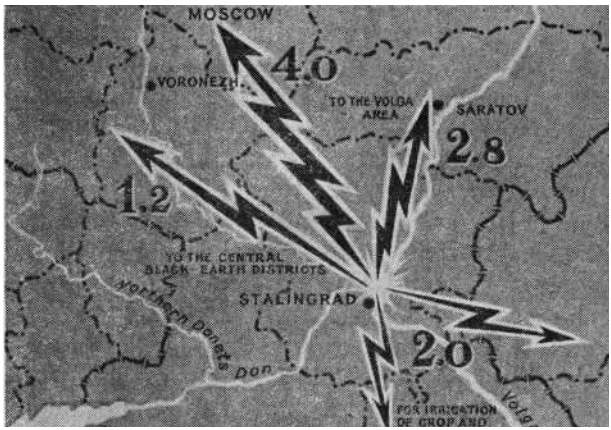
parts of Penza and Chkalov regions. In combination with other measures, this irrigation will guarantee high yields of grains and other crops under any weather conditions. Kuibyshev power will be widely employed in farming in the central Volga area. Electricity will be used in the main agricultural processes and to operate such collective-farm enterprises as pump works, hulling mills and flour mills. It will find wide application in the homes of the collective farmers.

Under the Stalin plan another power plant is being built lower down the Volga, near the city of Stalingrad. Here there will be a dam 32 metres high and a storage reservoir more than 500 km long and from 20 to 25 km wide. This project will permit large seagoing vessels to navigate the Volga.

The Stalingrad hydropower plant will have

Distribution of Kuibyshev Hydropower (in 1,000 million kwh)

The Kuibyshev Hydropower Plant will annually generate 10,000 million kwh of electricity



Distribution of Stalingrad Hydropower (in 1,000 million kwh)

The Stalingrad Hydropower Plant will annually generate 10,000 million kwh of electricity

a capacity of not less than 1,700,000 kw and will annually generate about 10,000,000,000 kwh of electricity, of which 4,000,000,000 will go to the Moscow area, 1,200,000,000 kwh to the central black-earth regions, 2,800,000,000 to Stalingrad, Saratov and Astrakhan regions, and finally, 2,000,000,000 kwh to bring water to crop and pasture lands in the trans-Volga and Caspian areas.

The 10,000,000,000 kwh of energy to be received from the two Volga stations will make the Moscow power network the largest in the world.

On the territory between the Volga and Ural rivers 852 km of main canals and 4,500 km of laterals are to be built. The Stalingrad main gravity flow canal will be some 650 km

long and will run from Stalingrad Dam to the Ural River.

The Stalingrad power station and the irrigation systems in the deserts and semideserts north of the Caspian Sea will change the face of these large drought-afflicted areas and improve their climate. Here water will be brought to 1,500,000 hectares of crop lands and 12,000,000 hectares of pasture lands. Cotton, rice, wheat and vegetables will be raised on the irrigated land.

Work done at the Valuiskaya Experiment Station in the Caspian lowland shows that with irrigation it is possible to obtain yields of 5.22 tons of spring wheat per hectare, 5.9 tons of branched wheat, 5.37 tons of winter wheat, 1.3 tons of alfalfa seed, 57.1 tons of sugar beet and 37 tons of potatoes. When the Stalin irrigation plan is accomplished, all the collective and state farms in the Volga and Caspian areas will be gathering such harvests.

Altogether, the newly-irrigated land in Stalingrad and Astrakhan regions will produce up to 200,000 tons of cotton, more than 3,000,000 tons of wheat, about 8,000,000 tons of hay and a tremendous quantity of vegetables. Livestock breeding in these vast steppes will be assured flowing fresh water, grazing lands and meadows yielding stable crops of grass.

Big canals will be built across the semidesert expanses which will be made to yield forage grass and food crops. Flood irrigation will be employed to obtain abundant grass crops: the yields will run as high as 10 tons per hec-

tare, or 20 to 25 times the usual grass yields in the steppe regions. Fresh water will improve the watering of livestock and permit fuller use of pasture lands. The livestock population will increase.

Excellent grassland is the Chorniye Zemli (Black Lands) district lying west of the lower reaches of the Volga. In the north the district is bounded by the Sarpa Lakes, in the west by the Yergeni Hills and a chain of shallow lakes, in the south by the Kuma River and in the east by the Volga. The bringing of water to the Chorniye Zemli will create exceptionally favourable conditions for the raising of fine-fleeced sheep and Astrakhan cattle. Because of insufficient water and frequent droughts these pastures now support only one-tenth the amount of livestock they might.

The mobile sands of the deserts north of the Caspian will be anchored and afforested.

The electricity furnished by the Stalingrad station, the network of collective- and state-farm windbreaks, of tree belts planted along the big canals, and of state forest shelter belts, combined with irrigation water for some 13,500,000 hectares of crop and pasture lands will transform the economy and physical geography of the area north of the Caspian. It will be turned into a flourishing region of electricity-based irrigation farming, fruit-growing, vegetable gardening and livestock raising.

In capacity and in output the Kuibyshev and Stalingrad hydropower plants will surpass all the other electric stations in the world, including the highly publicized plants

at Boulder Dam and Grand Coulee Dam in the United States.

The aggregate capacity of the two Volga plants will be approximately 4,000,000 kw and their annual output 20,000,000,000 kwh. This is 10 times the output of all the electric stations in pre-revolutionary Russia, and more than is produced today by the stations of Switzerland, Sweden, Italy and many other European countries. The cost of the energy generated at the Volga stations will be one-third of that produced at steam-power plants.

By obtaining electric energy from the Volga stations the country will save a tremendous amount of labour power — less coal being needed — as well as the tens of thousands of trains that would be required to deliver the coal to steam-power plants.

The Volga is a major waterway connecting Moscow and the Urals with the Caspian Sea and southern Russia. Oil, grain, timber and various industrial goods are transported along the river. Now the Volga-Don Shipping Canal links the Volga and the Caspian with the Black Sea.

When the Kuibyshev and Stalingrad power plants go into operation, navigation on the Volga will be considerably improved. The chain of dams, both those already built and those now under construction, will raise the river level; big seagoing vessels will sail up the Volga and its tributaries, going as far as the capital, Moscow. It is estimated that when all the work on the Volga is completed the river will be able to carry approximately 40 times

more freight than a major railway line.

The rise in the water level produced by the Kuibyshev Dam will be as much as 25 metres. The river channel will become deeper and broader for a distance of 500 kilometres upstream. The city of Kazan, now seven kilometres from the Volga, will become a river port.

The construction of these giant power plants on the Volga is proceeding at an unprecedented pace. An average of more than 10,000 cu m of concrete will be placed daily at the Stalingrad site. This is double the amount placed on the world-record days when the Dnieper Hydroelectric Station was being built; and the average there was no higher than 1,000 cu m a day. Transportation of materials to make such a quantity of concrete will require 25 trains a day.

Such speed and the creation of machinery permitting such high labour productivity are possible only under Soviet conditions.

The Dnieper station was built in 1,500 days. The Kuibyshev and Stalingrad plants will be built in a similar period, although the scope of the work on each will be many times greater. This shows how construction speeds in the Soviet Union have increased.

In the capitalist countries the construction of canals and hydropower plants proceeds at an extremely slow pace. It took 68 years, for example, to build the dam on the Nile, 35 years to build the Panama Canal and 10 years to build the Suez Canal. Decades were spent in building the Boulder power plant on the

Colorado River in Arizona. For 35 years now the Americans have been working on the Tennessee River development, and it is not completed yet.

On the other hand, construction of the Kuibyshev station was begun in 1950 and will be completed in 1955; the Stalingrad station was begun in 1951 and will be completed in 1956. And these power plants on the Volga will be the largest in the world.

4. THE MAIN TURKMEN CANAL

The Amu Darya, which rises in the Pamirs and the Hindu Kush, is one of the biggest rivers of Central Asia, but until recently was little used for irrigation. Every second the Amu Darya empties about 2,000 cu m of water into the Aral Sea. For centuries a tremendous amount of fresh water, between 50,000,000,000 and 60,000,000,000 cu m, has flowed uselessly into the sea every year before the eyes of the Turkmen, Uzbek and Kara Kalpak peasants, while their fields were hemmed in by menacing deserts.

From the standpoint of irrigation farming the Amu Darya has many positive features. Its floodwaters coincide almost exactly in duration with the vegetation period of the crops: they begin in March and last until October. The floodwaters of the Nile, considered one of the world's finest sources of irrigation, begin in August and last until December. But the Amu Darya is turbulent and difficult to regulate. For many centuries it has, time and again, washed away towns and villages and fertile areas, and refused to submit to man. Only under victorious socialism has it become possible, with the aid of a highly developed industry and collective effort, to subjugate the Amu Darya and harness her to serve the working people.

In ancient times the Amu Darya, besides flowing into the Aral Sea, delivered part of its waters through the channel of the Kunya Darya into the huge Sarykamysh Lake, and

thence into the Caspian Sea via the Uzboi River. Now the 500-km channel of the Uzboi will be used as part of the Main Turkmen Canal. The Amu Darya today empties only into the Aral Sea; its ancient streams and the Sarykamysh Lake have turned into salt-covered depressions, dried-up channels and accumulations of river sand.

The Khiva khans built dams on the western channels of the Amu Darya to prevent the water from reaching the fields of the unsubmissive, freedom-loving Turkmens who lived on the left bank of the Amu Darya, along its lower reaches. For centuries the Turkmen people, whose lands are in especially dire need of water, dreamed of using the Amu Darya for irrigation. They have been able to make their age-old dream come true only in Soviet times.

It would be difficult to overestimate the significance of the Main Turkmen Canal for the further economic and cultural development of the Turkmen SSR, nine-tenths of whose territory lies in the Kara Kum Desert. Built under the great Stalin plan for remaking nature, the canal will take from 350 to 400 cu m of water per second from the Amu Darya and carry it to the Kara Kum and southwestern Turkmen deserts, with their solonchak and sandy soils.

Large new irrigation systems fed by the Main Turkmen Canal will be built in southwestern Turkmenia to serve an area of 500,000 hectares; in the region of the Amu Darya's present delta for an area of 300,000 hectares; and near the ancient deltas of the Amu Darya (in Kara Kalpakia and north Turkmenia) for

another 500,000 hectares. Altogether, water from the Main Turkmen Canal will irrigate and bring under cultivation 1,300,000 hectares of crop land. The oases of ancient Khoresm and Messerian, which disappeared many centuries ago owing to lack of water, will be resurrected.

The Amu Darya carries along twice as much silt per cubic metre as does the Nile, famous for its high silt content, and the Amu Darya's alluvial deposits contain many minerals that promote plant growth. Thus the Main Turkmen Canal will both irrigate and fertilize new lands.

On the lands reclaimed from the desert the chief crop will be cotton, production of which will increase seven to eight times in the Turkmen republic. Irrigated land in Turkmenia gives exceedingly high yields of cotton, rice, sugar beet, wheat, forage grasses, fruit, grapes, mulberries, etc. In Tashauz Region, for instance, the Bolshevik Kolkhoz, Eighth of March Kolkhoz and other leading collective farms obtain from 3.5 to 4 tons of cotton per hectare year in and year out.

The new irrigation scheme will ensure a further advance in cotton growing in Kara Kalpakia and Turkmenia. In Turkmenia the area under vegetable gardens, orchards and vineyards will be considerably enlarged. The warm dry climate in southwestern Turkmenia is favourable for the cultivation of many subtropical plants. Irrigation will permit the raising of olive, pomegranate, fig and almond trees, besides especially valuable varieties of

cotton. Silkworm breeding will be expanded. Several million mulberry trees are to be planted along the banks of the canals. The cultivation of subtropical plants in the Kizyl Atrek district shows that it is fully possible to develop subtropical irrigation farming in southwestern Turkmenia.

In the zone serviced by the Main Turkmen Canal more than 1,000 large and fully electrified collective farms will be established; about 35 new administrative districts set up; 70 machine and tractor stations founded; more than 40 ginning plants built.

The decision of the Council of Ministers provides for the supplying of water to 7,000,000 hectares of pasture land in the Kara Kum Desert within the Main Turkmen Canal zone. At present livestock breeding in Turkmenia depends chiefly upon natural pasture land, which can be used almost all the year round, but the lack of water has been a definite drawback. The canal will create superb prospects for the development of animal husbandry. It will permit the head of cattle to be more than doubled, and Turkmenia's famous herds of karakul sheep and horses to be increased many times over.

In the Main Turkmen Canal zone there are 3,000,000 hectares of irrigable land. The decision of the Council of Ministers provides for the possible increase of the water flow from the Amu Darya into the canal to 600 cu m per second, which will enable additional tracts to be irrigated and brought under cultivation.

The decision also envisages the planting of

field windbreaks and the fixing of sands along the Main Turkmen Canal, along the large crop- and pasture-land irrigation canals, along the boundaries of the newly irrigated lands and around industrial enterprises and communities — on a total area of approximately 500,000 hectares. These measures will play a tremendous role in transforming the Turkmen deserts and fighting the shifting sands.

Big plantations of saksaul will be laid out to anchor the sands. The planting of black saksaul and other trees on the bare sand dunes in Bukhara Region has shown that within 10 to 15 years it is possible to create a forest that will ensure sand anchorage, protect the irrigated oases and yield large quantities of timber.

Finally, western Turkmenia will receive an unlimited supply of fresh water, so necessary for its industrial development. The capacity of Turkmenia's ginning plants is scheduled to grow more than tenfold. The textile mills alone will annually work up more than 2,000,000 tons of cotton and other industrial crops. Turkmenia's output of vegetable oil will increase more than elevenfold.

Three hydroelectric stations with an aggregate capacity of 100,000 kw are to be built at the dams of the Main Turkmen Canal. Electrification will be carried out in the country districts of the republic, electrically-driven machines will be employed on the cotton fields, and new industrial enterprises will be established. One of the world's largest centres of valuable chemical raw materials, at the Gulf of Kara Bogaz Gol, is to be expanded;

new plants producing mineral fertilizer for the cotton fields will be built there.

The advance in livestock farming and in the cultivation of subtropical crops will lead to development of the food industry. New meat-packing plants, fruit canneries, etc. will arise.

The Main Turkmen Canal will also be an important transport artery connecting the districts along the lower reaches of the Amu Darya with the Caspian Sea and, through the Volga and the Volga-Don Canal, with the Black, Baltic and White seas. Ships carrying cotton and other goods from the transformed desert will set out for the shores of Transcaucasia, for the Baltic, for Moscow and Leningrad.

For the first time in the history of hydroengineering, four vitally important problems — irrigation, power, transport and water supply — are to be solved on such a scale concurrently and as part of one scheme by the 1,100-km Main Turkmen Canal.

The Main Turkmen Canal from the Amu Darya to Krasnovodsk can be compared in length only with the Great Chinese Canal. All the others in the world, including those in the USA, India and Egypt, are much shorter.

The following figures will give an idea of the scale and speed of construction on this huge project: The Suez Canal, 164 km long, was built in 10 years, and the Panama Canal, 81.3 km long, required 35 years. The Main Turkmen Canal and its entire system of irrigation canals, 2,300 km in length, will be built

in seven years. Total earthwork will amount to between 600,000,000 and 700,000,000 cu m.

Preparatory work on the Main Turkmen Canal project was started in 1951. The project is to be completed in 1957.

5. THE GREAT STALIN PROJECTS IN THE UKRAINE AND THE CRIMEA

The idea of using the waters of the Dnieper for irrigating the southern Ukraine and the northern Crimea was advanced some 40 years ago by Boris Morgunenkov, the hydraulic engineer, but the Tsarist government was incapable of appreciating his project, much less acting upon it.

Only the Soviet state has proven equal to this task. At the initiative of the great Stalin and according to his plan, work was begun in 1951 upon the Kakhovka Hydroelectric Station; in 1956 the station will be completed, and in 1957 the entire irrigation system.

The Kakhovka reservoir on the Dnieper and the South-Ukrainian and North-Crimea canals will irrigate 1,500,000 hectares of fertile black earth in the ancient Zaporozhye and Taurida steppes and bring water to 1,700,000 hectares of land suitable lor grazing.

The South-Ukrainian Canal will begin at Zaporozhye on the Dnieper; utilizing water from the reservoir on the Molochnaya River, it will cross the southern Ukraine toward Askania Nova and the Sivash. The North-Crimea Canal will begin at the Sivash, run to Jankoi and then across the steppe districts of the Crimea to Kerch. The two canals will comprise a single waterway 550 km long.

As part of the irrigation scheme two huge dams and two large storage lakes, with capacities of 14,000,000,000 and 6,000,000,000 cu

m are to be built on the Dnieper, one near the town of Kakhovka and the other on the Molochnaya River. The Kakhovka power plant will generate about 1,200,000,000 kwh annually in years of average water flow. Besides the main dams, several small reservoirs with a total capacity of about 1,000,000,000 cu m will be built on the South-Ukrainian Canal. The builders will have to remove between 250,000,000 and 300,000,000 cu m of earth, or four times as much as when the Suez Canal was built. The canal will have a flow of 600-650 cu m per second, that is, as much as the Dnieper in the summer months.

These new projects in the southern Ukraine and the northern Crimea are of great economic importance. Dnieper water will go to irrigate 1,500,000 hectares of extremely fertile land which was afflicted by drought every three or four years over the past six decades. After the canals are built, the collective and state farms in their zone will be assured abundant and stable yields of grains and various valuable industrial crops.

Cotton is a new crop in the Ukraine, where it is grown on unirrigated fields. And although the southern Ukraine has plenty of warmth and long summers, the cotton yield there, compared with the yield on irrigated land, is not high. The Dnieper water will allow the area under cotton to be increased several times over. Average yields will rise between five and sixfold.

A new cotton-growing area which will supply the light industry with hundreds of thou-

sands of additional tons of raw material will come into being in the southern Ukraine and the northern Crimea. The fertility of the land in these areas will increase sharply. Wheat yields there have hitherto averaged from 1 to 1.1 tons per hectare, but given irrigation the black-earth lands can produce double and triple that amount, as has been demonstrated. Reclamation experiment stations in the Ukraine obtain from 3 to 3.5 tons of wheat per hectare on irrigated fields, 12 tons of alfalfa and 55 tons of cabbage. Hence, when the irrigation scheme is completed the Ukraine and the Crimea will produce 800,000 tons more cotton, 2,000,000 tons more wheat, about 4,000 000 tons more hay and huge quantities of vegetables, fruit and grapes.

Water will be brought to 1,700,000 hectares of land in the southern Ukraine and the northern Crimea to promote the raising of beef and dairy cattle, fine-fleeced sheep and poultry.

The new canals will also supply water to the towns and villages. The Ukraine and the Crimea will receive a new power source that will raise the level of mechanization in agriculture. Electricity will be widely employed in ploughing, threshing and on livestock farms.

Under the plan the shifting sands in the Dnieper area, which have caused considerable damage to the Ukrainian economy, will be anchored. The planting of big forest belts along the canals, taken together with irrigation, will improve the climate in the southern Ukraine and the northern Crimea.

The high fertility of the black-earth lands, the warm climate and the selfless labour of the collective farmers will guarantee the country great benefits from irrigation in the Ukraine and the Crimea.

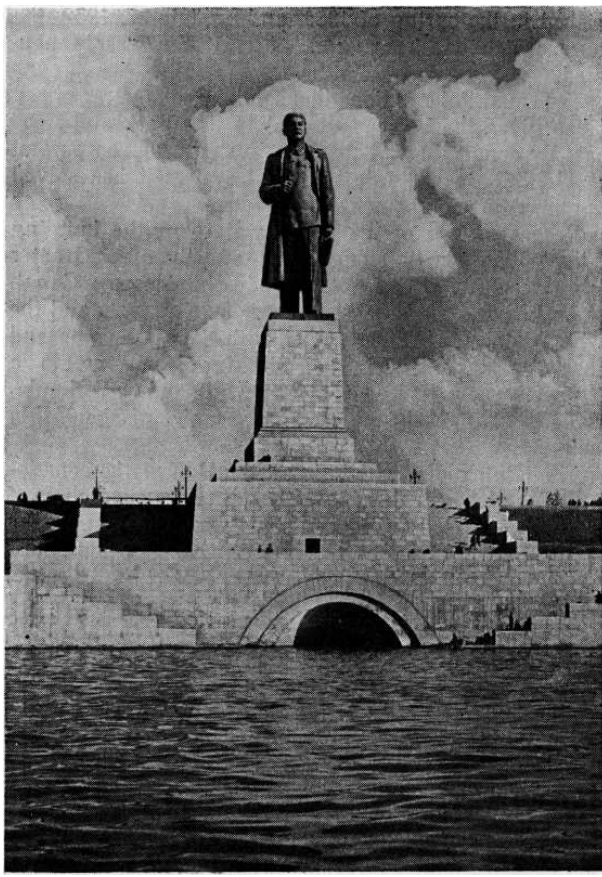
6. THE VOLGA-DON SHIPPING CANAL AND IRRIGATION OF THE ROSTOV AND STALINGRAD STEPPES

The decision of the Council of Ministers "On Construction of the Volga-Don Shipping Canal and Irrigation in Rostov and Stalingrad Regions" was published on December 28, 1950.

Construction of the Volga-Don Canal was started before the war, discontinued during hostilities, and resumed in 1947. The linking up of the two great rivers in the European part of the USSR is an important part of the grand Stalin plan to remake nature.

The Volga, the largest river in Europe, has no outlet to the ocean, emptying into the Caspian Sea. According to the brilliant plan outlined by Stalin, this river, whose basin is inhabited by one fourth the population of our country, and on whose banks stand thousands of towns, villages, factories and settlements, has become the main waterway in the European part of the USSR.

Work on the Volga-Don Canal proceeded at a high speed, thanks to the large amount of modern machinery employed. Completion of its main structures in 1951 permitted the government to reduce by two years the time limit originally set for the project. Construction was finished in the spring of 1952, and on July 27, 1952, the canal, which has been named after Lenin, was inaugurated.



The statue of J.V. Stalin at the Volga entrance to the V.I. Lenin Volga-Don Shipping Canal

The canal links regions thousands of kilometres apart. It has given the Volga an outlet to the Black and Azov seas. By connecting all the seas in the European part of the USSR in a single transport system it has solved a problem of country-wide importance.

Reconstruction of the Volga waterway, the building of the Volga-Don Shipping Canal, and the other Greater Volga schemes already completed — the Moscow Canal, the Uglich and Shcherbakov power developments and the Rybinsk storage lake — together with the huge dams and reservoirs at Kuibyshev and Stalingrad will create a completely new hydrographic network and will fundamentally change the physical geography of the Volga basin.

The joining of the Volga and the Don marks completion of the large-scale construction and reconstruction of waterways carried out in the Soviet years to connect the White, Baltic and Caspian seas with the Azov and Black seas. Volga cargoes now also have access to the Ukraine, via the Dnieper.

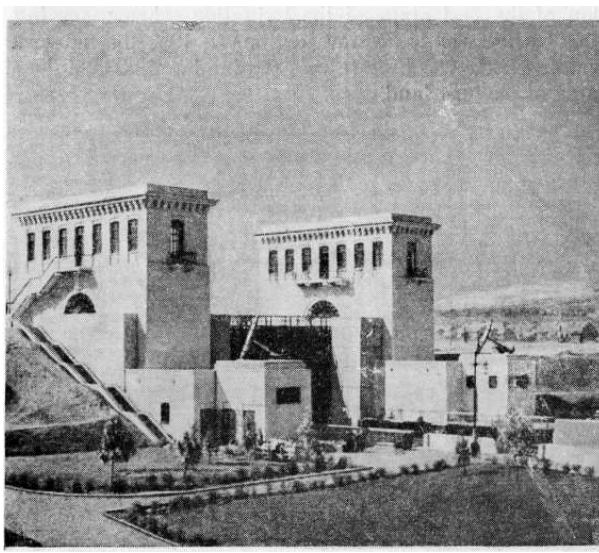
A continuation of the Volga waterway in the south will be the Main Turkmen Canal, leading into the heart of Turkmenia.

The builders of the Volga-Don Canal had to solve a number of big engineering problems. Near Stalingrad the two rivers are no more than 60 km apart, but the level of the Volga is 40 metres lower than that of the Don, and between them lies a narrow divide. Hence a complex system of locks had to be built on both the Volga and Don slopes. Another problem was the softness of the soil along the canal

route. All the structures — the locks, the canal and the spillways — were built on soft soils.

Extensive geological and engineering surveys helped to solve these problems.

The Volga and the Don were joined as follows: Near the village of Tsimlyanskaya a dam 13 km long was built, creating the Tsimlyanskaya reservoir with a projected volume of 23,800,000,000 cu m. Powerful pumping stations lift water from the Tsimlyanskaya reservoir into the Volga-Don Canal, which is 101 km long. Starting near Stalingrad and ending at Kalach on the Don, the canal has 13 locks, 3 dams, pumping stations, wharves, bridges and other structures.

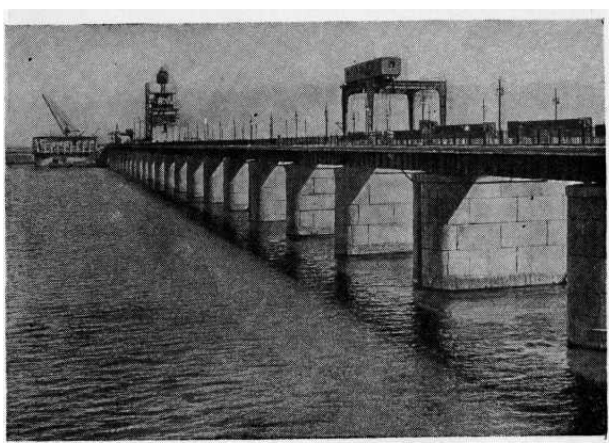


Lock No. 2 on the V.I. Lenin Volga-Don Shipping Canal

The power plant at Tsimlyanskaya Dam will have a capacity of 160,000 kw when completed. It is already supplying cheap electricity to the irrigation farming districts and for industrial needs.

Another important aspect of this project is the irrigation of 750,000 hectares of semidesert and drought-afflicted districts in the Rostov and Stalingrad regions in order to obtain high crop yields, and the bringing of water to 2,000,000 hectares of grazing land for the promotion of cattle breeding.

The Rostov region will be able to convert 600,000 hectares to irrigation farming and 1,000,000 hectares to pasture; in the southern districts of the Stalingrad region 150,000 hectares of crop land will be irrigated and 1,000,000 hectares of pasture land supplied with water.



The spillway at the Tsimlyanskaya Hydroelectric Station

Lock No. 13 on the V.I. Lenin Volga-Don Shipping Canal

In the spring of 1952, the Don main canal and head structure as well as the Azov and Nizhne-Don distribution canals were put into operation. This meant the completion of the first stage of the irrigation scheme, serving 100,000 hectares in the Rostov region. In 1953 the network will serve 225,000 hectares of crop land and 350,000 hectares of pasture land.

The collective and state farms will be provided with cheap electricity for large-scale use in ploughing and other field work, as well as for mechanizing laborious operations on cattle farms, etc.

Ample water for obtaining high and stable crop yields will be brought to the collective and state farm fields by a large and ramified irrigation system including the Don main canal, 190 km long, big distribution canals totalling 568 km, lateral canals and pumping plants. A

life of prosperity and happiness is ensured to the population of these districts by the irrigation scheme. The irrigated lands will become big producers of grain and industrial crops. On the collective and state farms of the Rostov and Stalingrad regions hundreds of thousands of hectares of irrigated land will be planted to cotton and tens of thousands of hectares to rice and fibre crops.

Irrigation farming will make for high yields here: wheat, from 3.5 to 4 tons per hectare; rice, from 4 to 5 tons; cotton, from 2 to 2.5 tons. There will be a significant increase in the head of beef and dairy cattle, hogs, sheep and poultry. Production of milk, butter and meat will go up 200 to 300% and wool production 100 to 200%.

The Volga-Don Canal, providing the simultaneous solution of a whole group of transport, power and irrigation problems upon which the further increase of our country's might and prosperity depend, is a great engineering project of communism and one of the greatest works of modern times.

7. CAPITALISM IS HELPLESS BEFORE THE ELEMENTAL FORCES OF NATURE

The capitalist world, with its antagonistic classes, destructive wars, economic crises and anarchy of production, has not been able to pose and solve the problem of methodical conquest of the elemental forces of nature.

In the many thousands of years of its existence mankind has managed to irrigate and bring under cultivation only slightly more than two per cent of the world's total desert area of 35,000,000 sq km.

More than once the numerous irrigation structures built through the centuries by the peoples of Central Asia, India and China have been destroyed or have sunk into decay owing to violent wars. The irrigated lands in many oases of Africa fell into decline after they were seized by the French, Belgian, British or Dutch imperialists.

What were once large irrigated and populous territories, towns and oases have been reconquered by the desert not because of any natural process of "Asia drying up" and not because of any "offensive of the Sahara sands." The real reasons for the destruction of the ancient oases in the world's deserts are the wars, the internecine strife and the colonial-feudal system of land management.

In every country of South America, Africa and Asia they invaded the imperialists seized the best land, the developed land. The native population of Peru, Mexico, Brazil, South

Africa, the Sudan, India, Java and the Philippines, after losing their land, were converted into slaves of the imperialist invaders and began to die out from poverty and starvation.

The combination of rapacious colonial management and slave labour converts cultivated land into desert, leads to the disappearance of ancient irrigated oases, ruins the soil through alkalization and depopulates areas that once thrived. After the Spanish conquest, for instance, the highly developed irrigation systems of the Incas in Peru fell into ruin, as did the irrigated oases of the Aztecs in Mexico. Once thickly-populated oases in the Libyan Desert, oases in the Sahara, and other territories in North Africa which in the past (in ancient Roman times) produced much food and raw materials are now barren tracts.

Agriculture in India is in a badly neglected condition. While huge areas lie uncultivated because the irrigation and reclamation systems have broken down, millions of peasants and workers starve. The growing poverty and the decline in India's economy are attributed by the British colonizers to "overpopulation" — again the Malthusian doctrine — and to low soil fertility, which is a thoroughly unscientific explanation.

India's ancient irrigation works are either neglected or in ruins; the fertility of once flourishing oases is declining because the lands lack water, have turned into alkaline or become swampy. As much as 70% of the land suitable for cultivation lies permanently idle, and of the remainder only some 53% is regu-

larly cultivated. Harvest yields of food crops are steadily declining; in the past 15 to 20 years the wheat yield has fallen from 0.9 to 0.8 tons per hectare, and the rice yield from 1.7 tons to 0.8-1.1 tons per hectare.

In the middle thirties alone the cultivated area in India shrank by 2,500,000 hectares; by 1940 the area under food crops had dropped by 600,000 hectares. Every year some 600,000 persons die of starvation in India.

The people of Egypt are experiencing a similar tragedy. The building of the Suez Canal in the middle of the last century marked the beginning of Egypt's complete economic enslavement and her conversion into a colony first of France and then of Great Britain. The decline in irrigation farming in Egypt as a result of British colonial rule can be seen from the following statistics on cotton yields issued by the Egyptian Ministry of Agriculture:

	Yield of cotton (ginned) in metric tons per hectare
1897-98	0.63
1911	0.46
1920	0.35
1930	0.43

Statistics released by the Egyptian Ministry of Agriculture testify not only to a decline in cotton yields but also to a steady deterioration in the quality of the staple. Here are figures showing how the quality declined between 1922 and 1937:

In silkiness and fineness.....by 16%
In strength.....by 26%
In length.....by 11%

For the use of water pumps the landowner takes from the peasants five to ten times the actual cost. Egypt's best lands are owned by foreigners: in the thirties more than 400,000 feddans[1] of land were in the hands of foreign colonizers, and approximately the same amount of land remained for millions of peasants.

Here is what Saad Kamel, an Egyptian delegate, declared at the Second World Peace Congress (Warsaw, 1950):

"For 70 years Egypt has been ground down under imperialist rule. These have been 70 years of misfortune, ignorance and disease, of exploitation, oppression and terror. But they have also been years of incessant struggle for our freedom and independence. The imperialists have turned Egypt into one huge plantation supplying cheap cotton to the big Lancashire trusts. The result has been to make our country a classical example of the most miserable living standards and appalling poverty. All manner of disease is rife. Egypt has the highest child mortality rate in the world, and the average lifespan of its inhabitants is among the world's shortest."

The history of agriculture in South Africa has many features in common with that in

[1] One feddan is approximately equal to an acre. — *Ed.*

India and Egypt. After seizing the fertile land from the native population (the Bantu Negroes and others), the British and Dutch colonizers forced them onto barren tracts or converted them into slaves as sharecroppers.

Three fourths of the entire population of the Union of South Africa owns only one tenth of the cultivated land. The rest of the land has been seized by a small group of colonizers. Without land and without rights, the Negro and the other coloured population of South Africa live in poverty and hunger and are dying out.

Huge farming tracts in the Union of South Africa are abandoned by the European settlers and so "become depopulated." The lands that have been brought under cultivation are falling victim to erosion, suffering more and more frequently from drought, and losing their fertility. Agriculture in South Africa, a country once so richly blessed by nature, has come to the verge of disaster.

The picture is the same in Brazil and Argentina.

With its inherent obstruction of technical progress and its constant depression in agriculture, the capitalist system in the period of imperialism is incapable of developing irrigation farming either in the colonies or the metropolitan countries. Moreover, a system of agriculture that is dependent upon market competition and the extraction of profits makes rational methods of land management an impossibility altogether in the capitalist countries. Capitalist farming undermines soil

fertility and destroys the soil itself.

In the capitalist countries rapacious exploitation of the land is widespread, leading to loss of soil fertility owing to water and wind erosion, as well as to the formation of barren solonchak soils.

According to the American scientist Bennett, more than 400,000,000 hectares of land in the United States suffer from erosion, including about 100,000,000 hectares where erosion is almost complete. Erosion has made about 20,000,000 hectares of ploughland absolutely unfit for use; on the rest it has sharply reduced fertility. Some 8,000,000 hectares of irrigated land in the United States has turned into barren solonchak soil. Alkalinity is widespread on the irrigated land in India and Egypt. In the past 50 to 60 years the grain-growing districts of the United States have lost from 30 to 40% of their fertility.

In the capitalist countries proper management of the land is impossible because in their drive for profits the big farmers ignore crop rotation, fertilizers or soil conservation, while the small farmers are financially unable to apply methods of soil conservation. The result is the exhaustion, erosion or alkalization of the soil.

Progressive modern American literature paints a distressing picture of the impoverishment of the farmers in the United States as a result of the decline in soil fertility due to rapacious management. In his book *Ill Fares the Land*, Carey McWilliams describes how this decline came about. Small farmers, especially

the agricultural migrants, did not conserve or fertilize the soil and did not even drill wells. After one or two good wheat crops the soil became exhausted and pulverized. The topsoil turned into a fine powdery silt and was swept up in dust storms.

In her book *Why Farmers Are Poor*, Anna Rochester tells how overloading of pastures leads to ruin of the grasses and shrubs, to destruction of the topsoil. The Great Plains, once rich pasture lands, have turned into a desert across which dust storms regularly sweep.

The average farmer is unable to fight soil exhaustion single-handed. Approximately 500,000 farmers in the United States are incapable of ensuring food even for their own families owing to exhaustion of the soil on their farms; droughts and crop failures occur every three years. The causes of the loss of soil fertility in the United States, according to Anna Rochester, are the lack of proper crop rotation, overloading of ploughlands and pastures, the absence of a proper system of fertilization, the loss of organic matter, water erosion, wind erosion, etc.

At the present time the topsoil in the United States has been destroyed over vast areas stretching from Montana and Dakota to Texas; in Kansas, Colorado, New Mexico and Oklahoma, where the topsoil has been carried away, sand and dust cover farm buildings and gardens. Hundreds of thousands of farmers have been ruined; they and their families are left without means or shelter. Between 1940 and 1945, 238,000 farmers in the

United States were ruined. Between one and two million agricultural migrants roam the roads with their families over a distance of more than 1,000 miles in search of jobs and an opportunity to get back into farming.

Nowhere in the capitalist world, however, do the ruling circles take any effective measures to combat the offensive of the shifting sands. The imperialist policymakers are spending tremendous sums on the plotting and waging of aggressive wars, but they give only insignificant sums for the construction of irrigation systems.

Thousands of years have gone into creating fertile soils, but rapacious capitalist management ruins them within a few decades. Intensive labour and large expenditures on reclamation will be required to restore them to fertility.

8. MECHANIZATION ON THE GREAT PROJECTS

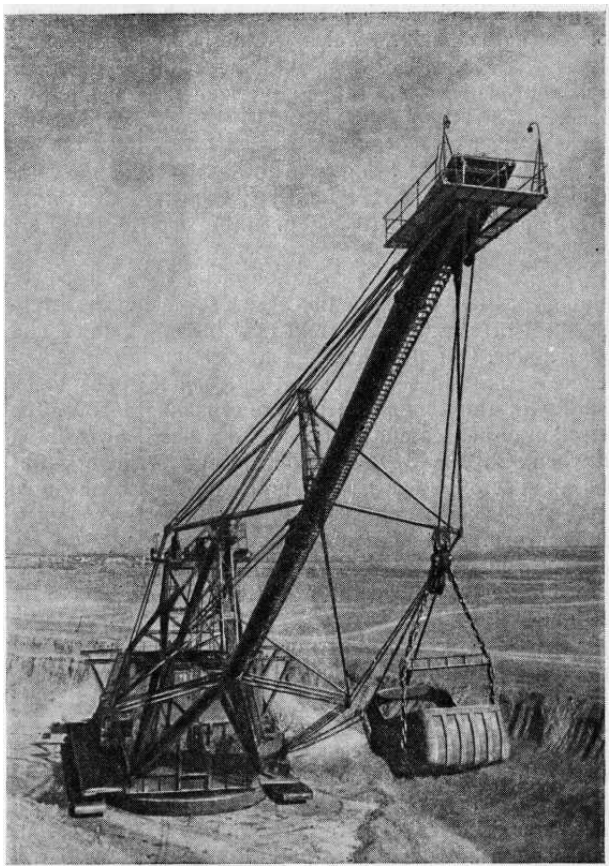
The power projects, navigation and irrigation canals and new irrigation systems involve a tremendous amount of earthwork: from 3,000,000,000 to 3,500,000,000 cu m. This is more than 15 times the amount of earthwork on the Moscow Canal.

To do this work by hand would require more than a million labourers. However, Soviet industry is turning out large numbers of the various machines and equipment used in earthwork, such as excavators, in particular the walking excavator, suction dredges, scrapers, dump trucks, bulldozers, etc.

This up-to-date machinery is ensuring high-speed earthwork and an enormous increase in labour productivity. For one thing, 50 times more earth is extracted per man by the crew of about 10 which operates a walking excavator than by the operator of an ordinary power shovel.

The Soviet super-powerful walking excavator has a bucket capacity of 14 cu m and removes from 200 to 300 cu m of earth per hour. Absolutely new methods are widely employed in excavation work, permitting dozens of metres of canal to be built a day; this speed can be increased by making still more extensive use of the walking excavators, scrapers and other machines.

In the earthwork, in particular in raising dams, the hydraulic-fill, suction dredge method is employed on a large scale. Soviet dredg-



An ESH 14/65 walking excavator in action during construction of the Volga-Don Canal

es remove as much as 1,000 cu m of earth per hour, which formerly required some 1,500 workers. These machines have displayed their splendid qualities on drainage work in the Colchis lowlands, as well as in the building of the Volga-Don Canal and the other current projects.

Blasting is also being used in deep excavation work. The laying of concrete is fully mechanized. Machines bring up as much as 10,000 cu m of concrete a day for placing.

The construction and operation of the big hydropower stations, canals and irrigation systems demands the establishment of a large number of new housing estates and good roads. Our industries are now producing an abundance of machines that permit automobile roads to be built with a minimum expenditure of manual labour. The erection of houses and other buildings has likewise been mechanized. The Soviet machinery for earthwork has been put through extensive tests on the Volga-Don Canal and the Mingechaur project on the Kura River, and it fully measures up to requirements.

The achievements in Soviet agricultural machinery engineering have considerably reduced manual labour in irrigation farming.

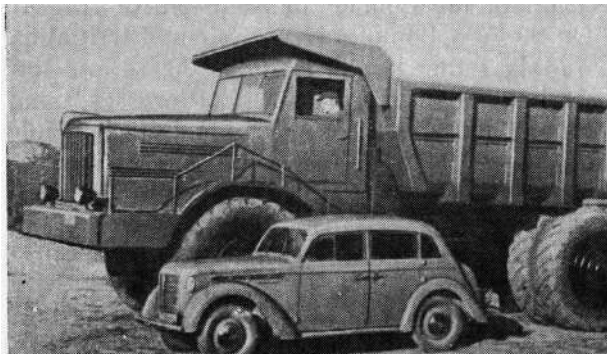
The Soviet cotton-cultivating and cotton-harvesting machines have increased both yield and labour productivity. Field experiments made at the Pakhta-Aral State Farm in 1949 by the Aralo-Caspian expedition of the USSR Academy of Sciences have secured high yields of cotton with an outlay of only 60

man-days of manual labour a year per hectare as against the 150-200 man-days spent when collective farms do not use cotton-harvesting machines and are not fully supplied with cotton-cultivating machines.

Estimates have shown that with the tractors and farm machines now being put out, as much as 93% of the field, irrigation and transport work can be mechanized on cotton farms employing the travopolye crop rotation system. Manual labour in raising cotton can be reduced to 60-65 man-days per hectare, and in raising grass crops to 16-17 man-days. With mechanization at this level one person can do the work on approximately four hectares of irrigated land, including three hectares under cotton. This is a big step forward. Until now, in most of the cotton districts one person has been able to cultivate from eight-tenths to one and a half hectares. Further improvement of agricultural technique will ensure a still higher productivity of labour in cotton raising.

Maximum development of mechanization in cotton production is a component part of the plans to develop agriculture on the new irrigated tracts, since bringing them under cultivation with the old means of mechanization would require a large influx of population. Soviet machines render possible development of new cotton lands without any substantial addition to the population.

The decision of the Council of Ministers of August 18, 1950, "On the Adoption of a New System of Irrigation in Order To Make Fuller Use of Irrigated Areas and Improve the



Such 25-ton dump-trucks are manufactured at the Minsk Auto Plant for the great construction projects of communism

Mechanization of Agricultural Processes," and the broad popular movement for speedy and efficient fulfilment of this decision furnish every possibility for extensive mechanization of irrigation farming in the Central Asian and Transcaucasian republics as well as in the Volga area, the Ukraine, the Crimea and the Stalingrad and Rostov steppes.

An analysis of crop yields on the irrigated lands in Central Asia and Transcaucasia shows that one of the hindrances to a further decisive increase in productivity is excessive alkalinity of the soil. In the irrigated districts with a high and persistent alkali concentration, yields as high as those in districts with normal, non-alkaline soils are not obtained in spite of a considerably larger expenditure of labour.

Alkalinity will be encountered in sections of the area to be irrigated by the Main

Turkmen Canal as well as in sections of the trans-Volga area, the southern Ukraine and northern Crimea. This problem has in the main been solved by Soviet science, which now has to direct extensive measures to eliminate soil alkalinity and to prevent alkalinity in the new irrigated tracts.

Universal introduction of the new system of irrigation, elimination of superfluous permanent ditches and efficient laying-out of the fields will considerably reduce seepage losses of water in the canals. This will also be furthered by continuation of the work to equip the irrigation systems with water-measuring devices and control structures, including the construction of engineering head installations, as well as by improved operation. All these measures will reduce seepage from the irrigation network into the ground-water and will eliminate the danger of alkali concentration in land with a natural flow off of ground-water.

9. THE CHANGES IN NATURAL CONDITIONS OUTLINED BY THE STALIN PLAN

The Stalin plan for the transformation of nature provides for extensive irrigation and afforestation to improve the climate and soil of our country. Eight gigantic state forest belts, stretching thousands of kilometres across the country from north to south, are being planted along the divides and floodlands of the largest rivers. These belts will stretch a total length of 5,320 km and will cover an area of 117,900 hectares. In a 20-metre strip the length of all the forest belts would be equal to about 2,000,000 km. The aggregate area under forest shelter belts, including the collective-farm belts, will amount to 6,000,000 hectares.

In conformity with the Stalin plan, the shifting sands are to be anchored by the planting of a cover of grass and trees. This will be done on the entire sandy area in the European part of the USSR and on an area of some 500,000 hectares in Turkmenia.

In addition, lanes and belts of trees are to be planted along all the big irrigation canals, along the edges of the irrigated oases, along the highways, around the dwellings and farm structures, etc. The universal introduction of proper crop rotations will form a solid grass cover for the ploughlands and pastures.

The result of all these measures will be the creation, on the territory of the USSR, of a new grass cover rationally distributed over the sands, the floodlands and banks of rivers,

and the slopes and plains of the divides. This cover will improve the flow of the surface and subsoil waters; it will also improve the lower stratum of the atmosphere.

Proper travopolye crop rotations will exercise an especially great influence on the topsoil. They will enrich the soil with organic matter and contribute to its friability and fertility. They will also substantially improve the water regimen of the soil by reducing undesirable evaporation and surface flow of atmospheric waters and by increasing water absorption and moisture conservation. Fundamental reclamation and irrigation will convert the barren solonets and solonchak soils of the steppes and deserts into completely different soils, sodded and fertile, from which high yields of grains and industrial crops will be reaped.

The root residue of the rotation grasses and the organic fertilizers will ensure multiplication and intensive activity of the soil microorganisms.

Travopolye crop rotations and the field windbreaks will protect the fertile topsoil from water and wind erosion; they will lessen the flow of surface and freshet waters, thereby decreasing removal of the matter dissolved in these waters and protecting the soil from depletion of its mineral nutrients.

The thick new grass cover will vastly improve the water regimen of the country. The grass cover on the fields, the forest belts, and the soil with its improved structure will retain moisture from the surface flow. River floods

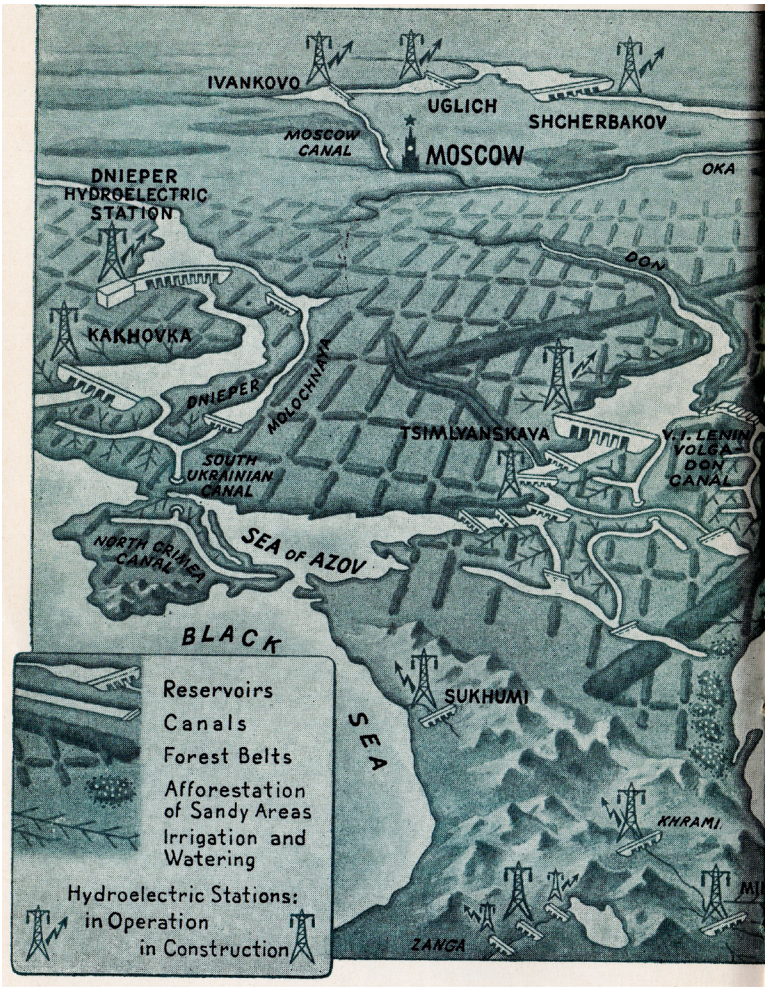
will be reduced and the flow of rivers will become more even.

The tens of thousands of ponds and reservoirs now being built in the heads of gullies and ravines will furnish moisture for the surrounding land through seepage and the formation of ground-water. This moisture will be used by the trees planted around the ponds and reservoirs.

Huge new storage lakes will come into being above the dams and power stations on the Volga, the Dnieper and the Amu Darya (on the Don the Tsimlvanskaya inland sea has already been created). The new deep-draft canals (the Volga-Don and the Main Turkmen) together with the big canals and dams built before the war (the White Sea-Baltic, the Moscow) will permit regular freight and passenger service between the White, Baltic, Black, Caspian and Aral seas. There will arise a new hydrographic network of huge irrigation canals, such as the Stalingrad, South-Ukrainian and North-Crimean. Tens of thousands of kilometres of lateral canals will run through steppe and desert areas which never before had flowing water.

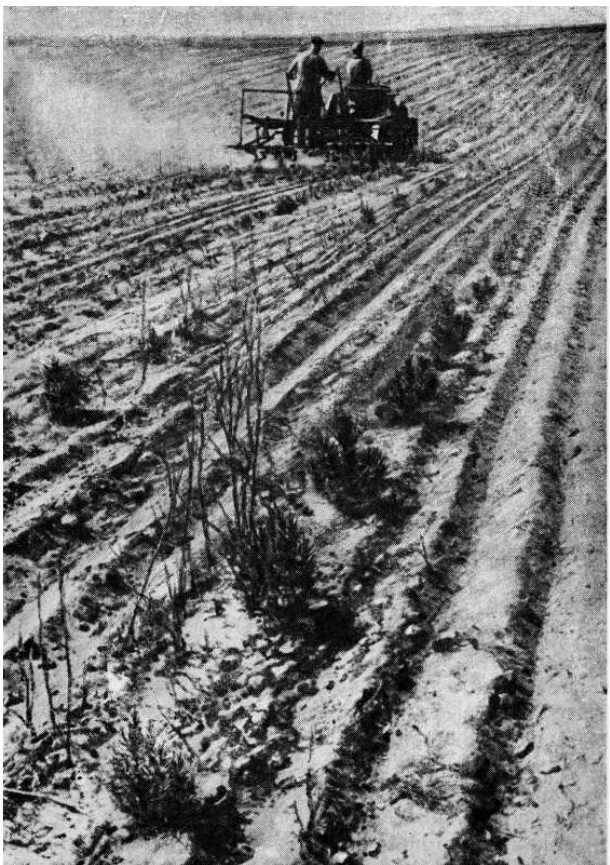
The following figures will enable one to judge the scope of the work to regulate the water regimen. The territory of Europe and Asia is equal to 53,500,000 sq km. Together, the basins of the Caspian and Aral seas make up about 4,000,000 sq km. If to this are added the basins of the Dnieper, Don and other rivers that are to be used for irrigation purposes, one has an area of between 5,000,000 and 6,000,000 sq km over which the water flow

GREAT CONSTRUCTION



MAP OF THE HYDROPOWER PROJECTS ON THE

VOLGA, DON, DNIEPER AND AMU DARYA RIVERS



Cultivating a young pine plantation in the Voronezh Region

and the regimen of the rivers and reservoirs are to be regulated. This is more than half the area of Europe and about 10% of the aggregate area of Europe and Asia.

A colossal amount of fresh irrigation water will be brought to the scorched soils of the semideserts and deserts. In places where the annual precipitation is from 75 to 250 mm, irrigation will add another stratum of 500 to 700 mm of water.

The dryness of the lower levels of the air will be lessened over the irrigated crop and pasture lands. The surface of the irrigated and plant-covered earth in the former desert areas will never rise to 60-70° C, as was the case when they were arid and exposed. Irrigation, the plant cover on the fields, and trees will create more favourable local climatic conditions, which will also influence the adjacent territories.

The chain of state forest belts, the collective-farm field windbreaks and the tree belts along the irrigation canals, the tree cover on the sands and the new leafy forests will exercise a powerful check on the dry winds. The disastrous action of the hot, dry winds, which wither the crops on fields now unprotected, will be diminished to a considerable extent.

One can also foresee an increase in local precipitation. The drought-afflicted Eastern European and Central Asian territories of the Soviet Union will receive additional precipitation.

The creation of a thick plant cover over a vast tract of afforested and irrigated land will

A shelter belt at the Eighth of March Kolkhoz in Kherson Region, the Ukraine

call forth changes in the moisture regimen, the temperature of the air, and in the oxygen and carbon dioxide regimen. There will be an increase in the amount of oxygen in the air and at the same time an increase in the turnover of carbon dioxide in the process of synthesis and mineralization of organic matter.

The Stalin plan for transforming nature in our country also provides for solution of that problem so important for the progress of human society — the problem of greater utilization of the inexhaustible solar energy that reaches the earth.

The creation of a dense plant cover in the arid steppes and deserts, that is, in areas where plant life was virtually nonexistent, will enable socialist society to obtain a tremendous quantity of new vegetable organic matter through utilization of solar energy. Bottled up in plants, this solar energy will be used subsequently as food, industrial raw material, fod-

der, fuel, etc.

But the most important way of using solar energy is by building powerful hydroelectric stations. The hydroenergy of rivers is nothing more than solar energy converted by nature herself. At the present time the hydroenergy of the Volga, Dnieper and Amu Darya rivers is utilized to a small degree. The construction of giant hydroelectric stations will increase the amount of available electric power by scores of billions of kilowatt-hours annually. In 1913, Tsarist Russia was near the bottom of the world ladder in electric power production, with a figure of some 2,000,000,000 kwh annually. On the eve of the Great Patriotic War the Soviet Union was producing up to 43,000,000,000 kwh annually. During the postwar Stalin five-year plan period, power production in the USSR grew by between 70 and 80%. The huge hydropower stations that are a part of the Stalin plan for remaking nature will within five to seven years increase the amount of electric energy generated in the USSR by 22,000,000,000 kwh.

At present the Soviet Union holds first place in Europe for power production, generating more than 100,000,000,000 kwh annually. When the Stalin plan is carried out it will be the biggest power producer in the world.

All of these magnificent processes, whose role we have every right to compare with the phenomena that change the physico-geographical aspect of our planet over millions of years, will be carried out under the Stalin plan before the eyes of our generation.

10. GREAT HYDROPROJECTS UNDER WAY

Under the leadership of the Party of Lenin and Stalin, and utilizing the notable successes of the postwar five-year plan, the Soviet people are carrying out the greatest projects of our day with tremendous enthusiasm, projects which will change natural conditions and immeasurably increase our country's productive forces. Thousands of surveyors, topographers, hydrogeologists, soil scientists, civil engineers and workmen are busy on the canal routes and at the hydropower sites.

Local sources of building materials have been opened up; observation of the regimen of rivers is being carried on; highways, railway spurs, warehouses and auxiliary structures are being built. New towns have sprung up. The personnel of the rail and river transport services are ensuring rapid delivery of all goods to the great projects.

The largest plants in the country, among them the Elektroprovod Works, the Hammer and Sickle Mill, the Elektrosila Plant, the Urals Heavy Engineering Works, the Elektrostal Works, the Gorky Auto Plant, the Kharkov Tractor Plant and the Stalingrad Tractor Plant, are sending them quantities of machinery and equipment.

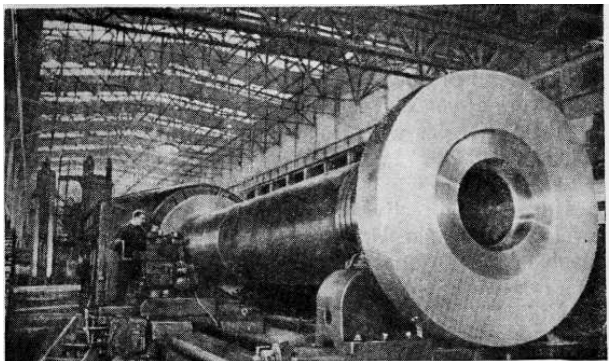
Trains deliver metals, cable, superpowerful excavators, transformers, suction dredges, drilling installations, motor trucks, power trucks, tractors, winches and other machines, mechanisms and materials to Kuibyshev, Stal-

ingrad, Kakhovka and Tahia Tash in an endless stream. They come from Moscow, Leningrad, Siberia, the Urals, Uzbekistan, Armenia and Kazakhstan.

Factories and mills in Erevan, Tashkent, Kiev, Alma Ata, Rostov, the Donbas and elsewhere hold it a matter of honour to fill orders for the great engineering projects of communism ahead of time, and to supply the projects with first-class output in quantities that will ensure ahead-of-schedule completion of the jobs.

The entire Soviet Union is contributing to fulfilment of the Stalin plan for the transformation of nature.

The Stalin plan opens up magnificent prospects for the further progress of Soviet science; it confronts scientists with a multiformity of problems in literally all branches of knowledge. The exceptional scope of the new schemes and the short period in which they are to be accomplished oblige Soviet science to place at the disposal of the surveyors, designers and builders a summary of all the discoveries and technical achievements capable of improving and accelerating the planning, construction and commissioning of the new power and irrigation developments. Of tremendous urgency is speedy generalization and application of the practical experience gained in the building and operation of the major hydro-technical developments of the prewar period: the Dnieper Dam and hydroelectric station, the Great Ferghana Canal, the Pakhta-Aral State Farm and others.



The shaft of a turbine being made at the Stalin Metalworks in Leningrad for one of the big hydroelectric stations

Construction of the gigantic power stations and irrigation systems will at the same time contribute to a further advance in the natural sciences, hydrotechnics, hydropower engineering, land reclamation and agronomy, and will strengthen collaboration between science and industry.

A committee to coordinate research for the construction projects has been set up by the USSR Academy of Sciences. Committee members include prominent Soviet scientists and the men who are in charge of designing and building the new power plants and irrigation systems. Similar committees have been established by the Academies of Sciences of the Ukraine, Kazakhstan and Uzbekistan to coordinate the research there.

Soviet men and women are fully conscious of the fact that the Kuibyshev, Stalingrad and Kakhovka power plants, and the Volga-Don,

Main Turkmen, South-Ukrainian and North-Crimean canals mark a new and higher stage in the country's development. Completion of these grand projects will further technical progress in all branches of Soviet industry, and promote solution of the complex scientific and technical problems involved in building communism.

Creative collaboration between scientists, workers in industry and collective farmers is an important factor in speedy accomplishment of the Stalin plan for remaking nature. Soviet scientists and engineers are providing the builders with the best and most modern methods of constructing hydroelectric stations and irrigation systems.

The 19th Congress of the Communist Party of the Soviet Union opened up a new, glorious page in the history of the Soviet state. J.V. Stalin's brilliant work *Economic Problems of Socialism in the USSR* and the decisions adopted by the Congress have armed the Party and the Soviet people with an inspiring program for building communism. It is an historic, scientifically-grounded program that calls the Soviet people to undertake new feats of labour for the further development of the socialist economy and culture, and for strengthening the might of the Soviet state.

The land of socialism is completely engrossed in its great work of peaceful construction. The people are directing their energies with tremendous enthusiasm towards fulfilment of the tasks set by the 19th Party Con-

gress.

Under the directives for the Fifth Five-Year Plan of development of the USSR (1951 to 1955) that were adopted by the Congress, the aggregate capacity of the country's power stations is to be approximately doubled. The Kuibyshev, Kama, Gorky, Mingechaur and Ust-Kamenogorsk hydropower plants, as well as a number of others, are to be completed. Large-scale irrigation development in the areas of the great construction works and in other districts is provided for by the plan. Special prominence is given to the construction of irrigation and water supply systems employing the electricity produced by the Kuibyshev Hydroelectric Station and in the zone of the Lenin Volga-Don Shipping Canal. In its decisions the 19th Party Congress described the construction of those systems as a task of prime importance.

The new five-year plan demonstrates to the whole world the great viability of socialism and the fundamental superiority of the socialist system of economy over the capitalist system. In the grand construction works of the Stalin era, which the Soviet people are carrying out under the leadership of the Party of Lenin and Stalin, the world sees practical implementation of the Stalin plan for building communism.

THE NOVEMBER 8TH PUBLISHING HOUSE

Catalogue available at november8ph.ca

NEPH would be glad to have your comments on this book, its design, any corrections and suggestions you may have for future publications. Please send them to **info@november8ph.ca**

Communist Party of Canada (Marxist-Leninist)
Read *TML*!
Support CPC(M-L)!
cpcml.ca