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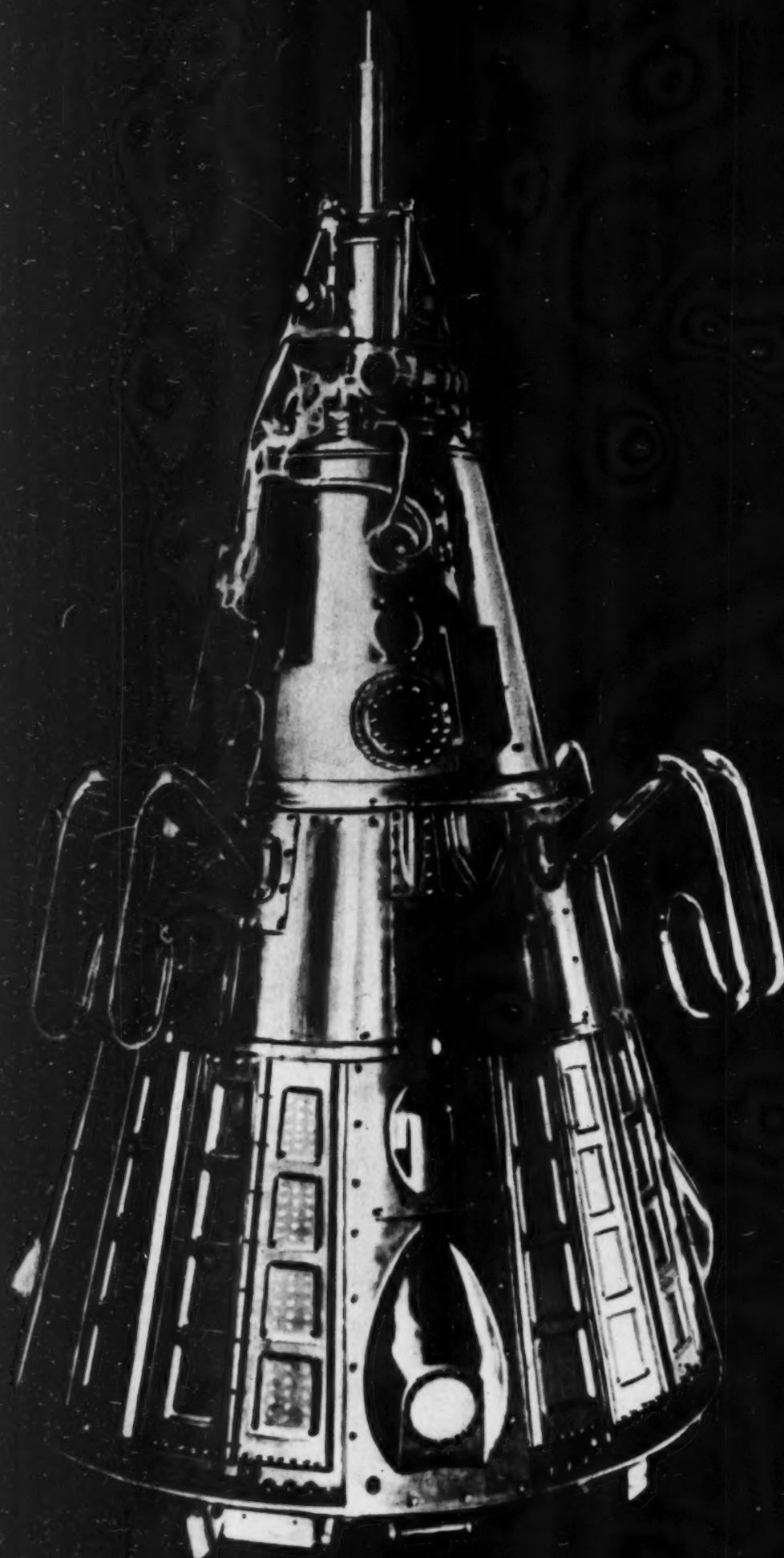
USSR

SPUTNIK III—
LABORATORY
IN SPACE

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No. 7 (22)—20 Cents





SPUTNIK III

USSR

ILLUSTRATED MONTHLY

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SPUTNIK III

LABORATORY IN SPACE

SCIENCE took another great step into the cosmos when Sputnik III was placed in orbit on May 15. Flashing across the heavens, the new ton-and-a-half satellite, the heaviest yet launched, bears witness to the speed with which Soviet scientific research and engineering skill is moving ahead.

Constant increase in the weight of the sputniks reflects the growing possibilities of Soviet rocket technology. It has already reached a point where it can launch a rocket beyond the limits of the earth's gravity, authorities on the subject say. But such a cosmic rocket will be of scientific value only if it is sufficiently equipped with a wide range of instruments which will fill the gaps in our knowledge of the universe and furnish new data on space travel.

Scientists believe that Sputnik III brings us closer to this kind of rocket. The date for it may be circled on the calendar in the not too distant future.

Sputnik III, sent aloft in accordance with the program of the International Geophysical Year, travels farther from the earth than the previous two Soviet satellites. The peak of its elliptical orbit, or apogee, is 1,167 miles from the earth. The shape of this ellipse was chosen in such a way that it has made it possible to carry out scientific investigations at the most interesting range of altitudes.

The plane of the new sputnik's orbit has an incline of 65 degrees to the plane of the equator. It requires a much higher initial thrust to launch a satellite into such a plane than would be needed for one sent up at a lesser angle. But the 65-degree angle has the advantage of permitting wider study because the satellite passes over practically all of the populated areas of the globe, excluding only the polar extremes.

As the satellite circles around the earth its orbit gradually shrinks due to the braking effect of the upper layers of the atmosphere, and it finally burns out because of the friction. The preliminary estimates for Sputnik III indicate it will stay aloft longer than the first and second sputniks.

The scientific research program developed for Sputnik III is considerably greater than that for any of the satellites previously launched. It has all the instruments installed aboard its predecessors plus many new devices, making it possible to obtain valuable information in new fields. The large size of Sputnik III and the broad scope of research conducted by its numerous instruments give this satellite the character of a real automated scientific station in the cosmos—the first to be so thoroughly equipped.

Shaped like a cone, the highly polished aluminum alloy shell of

Sputnik III has a base measuring five feet eight inches in diameter; its height is eleven feet nine inches. When put into orbit by carrier rocket the sputnik had a total weight of 2,925 pounds, with the shell weighing only 792 pounds and all the rest of the weight being put into instruments. The space devoted to the pay load is approximately 110 cubic feet.

The instruments aboard Sputnik III can be subdivided into three main groups: the first to investigate cosmic phenomena, the second to study the phenomena in the upper layers of the earth's atmosphere, and the third comprising the radios, telemetering equipment and power supplies.

The instruments designed to investigate the properties of the atmosphere include devices for studying its composition and air pressure in the upper layers. Among them are instruments for studying the earth's magnetic field which previous sputniks did not have.

The origin of the magnetic field is not yet established by science, and there is much obscurity about the causes of periodic changes in the magnetic field and sudden magnetic storms. Answers to these and other questions will be obtained with the help of such instruments.

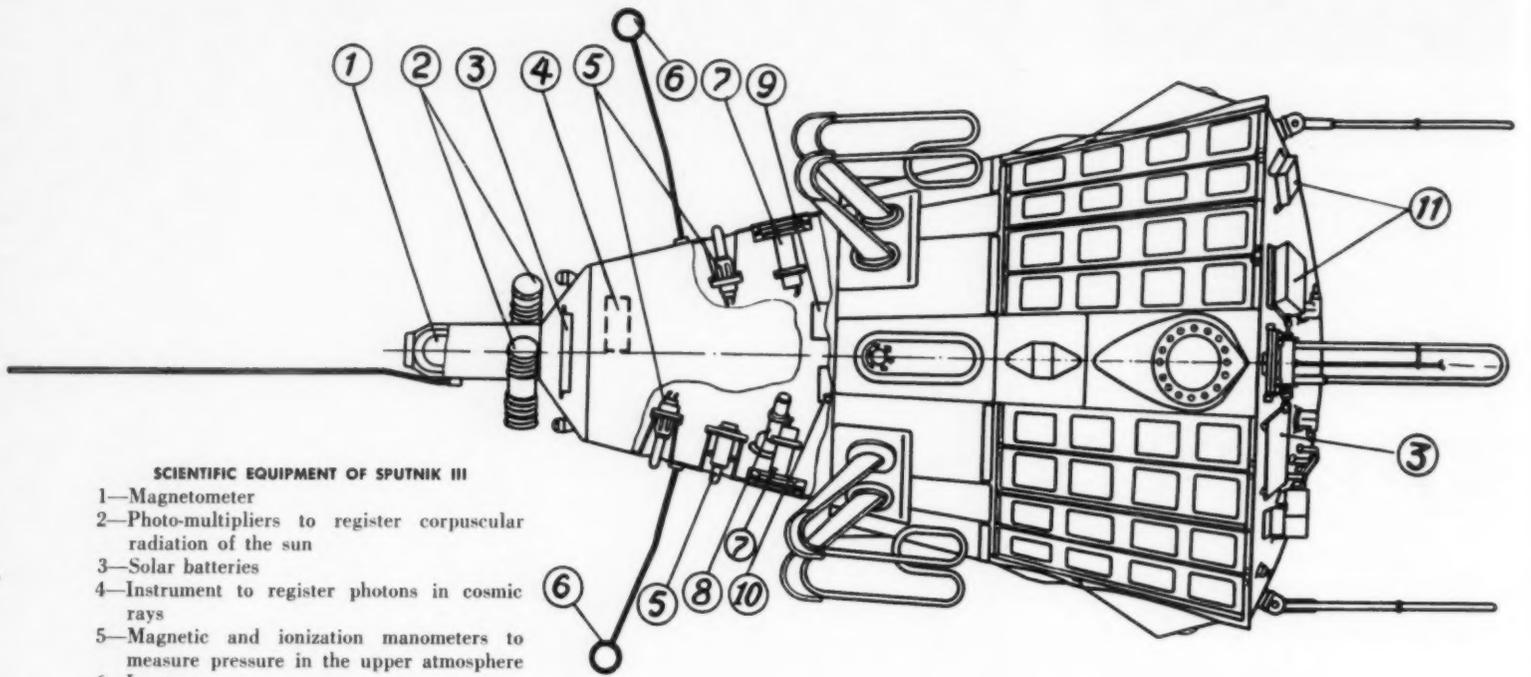
Other instruments sent with the satellite for the first time are designed to measure the concentration of positive ions in the earth's upper atmosphere and the strength of the electric charges striking the sputnik's shell as a result of solar radiation and the intensity of the earth's electrostatic field.

Scientists believe, in this regard, that there are permanent electric currents in the ionosphere which are disrupted from time to time by showers of particles from the sun (known as corpuscular radiation), giving rise to both the aurora borealis and the magnetic storms that play such havoc with communications.

Sputnik III has instruments to measure the sun's corpuscular radiation and cosmic rays. They are of a considerably more advanced design than those of Sputnik II. Apart from registering the general intensity of cosmic radiation, the instruments record the composition of cosmic rays and several other properties.

Research on corpuscular radiation and cosmic rays carried on with the aid of Soviet and American satellites has revealed a number of novel and entirely unexpected phenomena in this field. Sputnik III will help verify the new hypotheses of the world's scientists developed from these discoveries. The study of cosmic rays will not only help us extend our knowledge of the universe, but it will also solve problems related to assuring the safety of interplanetary communication.

Continued on page 3

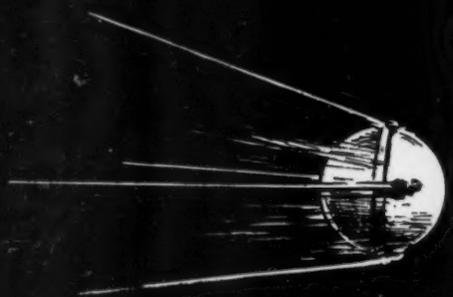


SCIENTIFIC EQUIPMENT OF SPUTNIK III

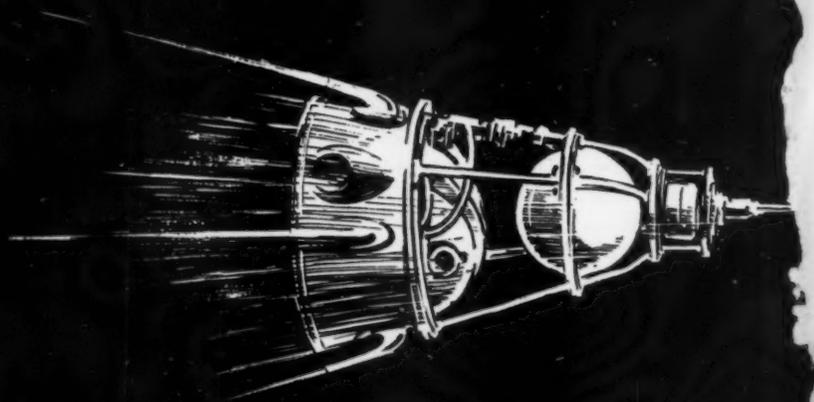
- 1—Magnetometer
 - 2—Photo-multipliers to register corpuscular radiation of the sun
 - 3—Solar batteries
 - 4—Instrument to register photons in cosmic rays
 - 5—Magnetic and ionization manometers to measure pressure in the upper atmosphere
 - 6—Ion traps
 - 7—Electrostatic fluxmeters to measure electrical charge and tension of electrostatic field
 - 8—Mass-spectrometric tube to register composition of ions at high altitudes
 - 9—Instrument to register heavy nuclei in cosmic rays
 - 10—Instrument to measure intensity of primary cosmic radiation
 - 11—Devices to register micrometeors
- Electronic units of scientific equipment, radio measuring and radiotelemetering systems, time programing device, temperature regulating and measuring devices and electrochemical batteries are inside the body of the sputnik and are not seen in the diagram.

SPUTNIK III

LABORATORY IN SPACE Continued



SPUTNIK I



SPUTNIK II

Other instruments in the group concerned with cosmic phenomena are those for studying micrometeors, rushing in an incessant flow from outer space toward the earth. Instruments aboard Sputnik III not only register every impact of a micrometeor, but also measure its strength. These studies are of great value for astronomy and geophysics, and are vitally important for future flights by man into outer space.

Because some of the instruments in Sputnik III operate most efficiently and accurately at particular temperature levels, the temperatures inside are regulated automatically with the help of circulating gaseous nitrogen and also by a device which changes the coefficient of the satellite's surface radiation and reflection.

Most valuable data was received from the first two sputniks on temperature fluctuations in their various parts. This work is being further evolved by Sputnik III and thus will help work out temperature regimes for space flight with living organisms.

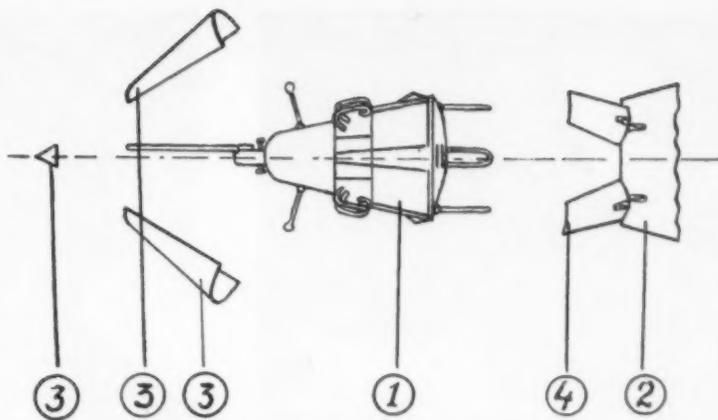
Sputnik III has a radiotechnical system to make precise measurements of its movement in orbit. One of the most complex is the multi-channelled radiotelemetering system which continuously registers all of the measurements and data obtained by the instruments and "memorizes" them. When the sputnik passes over the special reception stations on Soviet territory, the vast volume of "memorized" information is transmitted at very high speed.

The size of Sputnik III permitted the installation of powerful transmitters ensuring the reception of their signals all over the world—not only at scientific centers, but by radio amateurs listening in for them on every continent.

The functions of all scientific and measuring equipment aboard the sputnik are automatically controlled by the time programing device. This electronic brain turns all the instruments on and off at scheduled periods and also operates the radio transmitters sending the data gathered to earth. The schedule is so devised as to ensure the maximum economy in power consumption.

Powering the sputnik's instruments and radios are the electrochemical batteries previously used in other satellites as well as solar batteries. The use of solar batteries makes it possible to considerably increase the period of active work of the sputnik's instruments.

Sputnik III is being tracked by both radiotechnical and visual methods which are considerably improved compared with those used for the



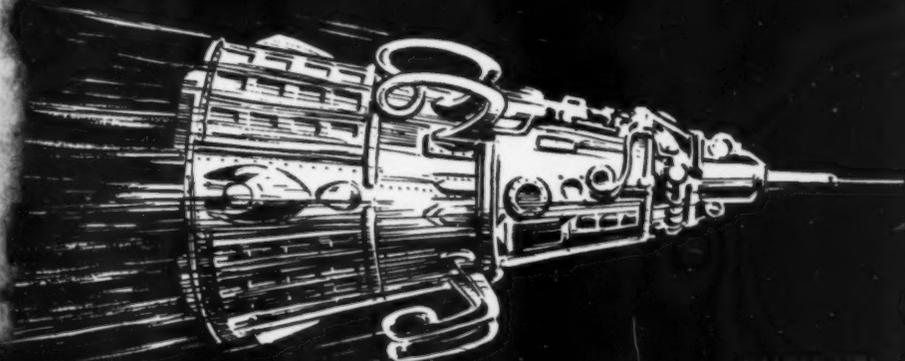
SEPARATION OF SPUTNIK III FROM CARRIER ROCKET

- 1—Sputnik
- 2—Carrier rocket
- 3—Separable protective cone
- 4—Separable shields

earlier satellites. The Soviet Union has expanded its network of stations for receiving and analyzing information transmitted from the satellite. All this data is collected at a central station where it is collated with the aid of high-speed electronic computers.

Much of the information received comes from scientific centers of foreign countries. Soviet scientists, in turn, have given their colleagues abroad the extensive data gathered by the first two sputniks and are continuing this international cooperation with their third satellite as they feel it will be of the utmost importance in solving the gigantic problems of space explorations.

This scientific cooperation charts a path for future scientific advances. The coupling of Soviet and American space exploration holds forth untapped possibilities for pooling man's knowledge and skill in greater joint endeavors. It is the earnest hope of Soviet scientists that these possibilities will become reality. ■



SPUTNIK III

	SPUTNIK I	SPUTNIK II	SPUTNIK III
LAUNCHED	October 4, 1957	November 3, 1957	May 15, 1958
WEIGHT	184 pounds	1,120 pounds	2,925 pounds
APOGEE	588 miles	1,038 miles	1,167 miles
LIFETIME	3 months	5½ months	



PHYSICIST LEV ARTSIMOVICH



PHYSICIST NIKOLAI BOGOLYUBOV



CHEMIST GRIGORI RAZUVAYEV



LENIN PRIZE WINNERS OF 1958

The Lenin Prizes are awarded each year to scientists, engineers, factory and farm workers, to scholars, writers, artists and musicians who have made the most notable contributions in their field of endeavor.

The prize winners are selected from among the many thousands of nominees recommended by scientific and cultural bodies throughout the country. The final decision is made by two judging committees, one for science and technology, the other for literature and art. Both committees, composed of leading authorities, are under the jurisdiction of the USSR Council of Ministers.

This year the Lenin Prize Committee for Science and Technology awarded ten prizes in science and six in technology. The other Committee awarded four prizes in the fine arts.

CHEMIST NIKOLAI EMANUEL



Atomic Physics

FIRST place on the list of science award winners went to a group of physicists of the Atomic Energy Institute of the USSR Academy of Sciences for research paving the way to controlled thermonuclear reactions.

Prize winners are Academicians Lev Artsimovich and Mikhail Leontovich and researchers Alexander Andrianov, Olga Bazilevskaya, Stalii Braginsky, Nikolai Filippov, Igor Golovin, Stepan Lukyanov, Samuil Osovets, Igor Podgorny, Vasili Sinitsyn and Natan Yavlin-sky.

The group investigated high impulse discharges in plasma (gas in a completely ionized state) that make it possible to reach the temperatures of millions of degrees required to produce a thermonuclear reaction. They worked out original methods of research through which they were able to study in detail the various stages of a high impulse discharge in plasma and developed a quantitative theory to explain the mechanism of the discharge.

As a result of these investigations, the physicists discovered hitherto unknown properties of plasma and processes not observed in usual gas discharges. The study disclosed the new and very important fact that intensive neutron and hard X-ray radiations appear at maximum compressions of plasma subjected to what is termed the "pinch-effect." Neutrons emitted from plasma are apparently not of thermonuclear origin, and the study attempts to explain the mechanism by which they originate. The study also provides a theoretical

explanation of the finding that "pinch-effected" plasma has paramagnetic properties—it draws to itself the lines of force of the exterior magnetic field.

Superconductivity

At very low temperatures the resistance of certain metals to electric current drops to an infinitesimally small value. This phenomenon is known as superconductivity.

Academician Nikolai Bogolyubov received a Lenin Prize for his work in developing the theory behind superconductivity by use of new methods he evolved in quantum field theory and in statistical physics. He is well-known as a mathematician, and his work in quantum field theory is highly regarded by physicists the world over.

In 1946, Academician Bogolyubov had worked out a theory of superfluidity by use of mathematical methods based on special canonical conversions. For his theory of superconductivity he further generalized and adapted the statistical method he had evolved for his superfluidity theory.

His research is the successful climax of 50 years of work by world science to fully solve the problem of superconductivity.

Chemistry

Professor Grigori Razuvayev of the University of Gorky received a Lenin Prize for his very significant work in the chemistry of free radicals in solution.

Radicals are groups of atoms in the mole-

cules of chemical compounds which are not changed by many chemical reactions. Professor Razuvayev obtained the free radicals through photo disintegration of metal-organic compounds exposed to mercury lamp radiation and also by means of thermic disintegration of diacid peroxides, polyacids and other compounds.

Professor Nikolai Emanuel of the Institute of Chemical Physics of the USSR Academy of Sciences received a Lenin Prize for his investigations into chain reaction, a phenomenon which has bearing on various fields of the natural sciences. His work markedly advances progress in study of the chain reaction theory.

All of Emanuel's theoretical research has immediate practical significance in further refining and speeding production of industrial chemicals. One of his investigations led to an original method for obtaining valuable oxygen-containing products by oxidizing hydrocarbon gases in a liquified state at temperatures and pressures close to the critical.

Earth Science

For research in ore-formation processes related to magmatic activity, a notable contribution to geologic studies, a Lenin Prize was awarded to Academicians Anatoli Betekhtin, Dmitri Korzhinsky and Victor Nikolayev and posthumously to Alexander Zavaritsky.

Most of the nonferrous and rare metal deposits and many ferrous and inert metals are of igneous origin, formed by solidification of molten magma. The study, by examining the process of magmatic exudation of ore-forming solutions and the way in which mineral substances are deposited, makes a signal contribution to work on ore-formation theory, with very important bearing on applied geology.

Academician Nikolai Shatsky was awarded a Lenin Prize for the 1:5,000,000 tectonic map of the Soviet Union and adjacent countries made under his direction and based on his principle of classification of regions by the age of their fold base.

On the basis of this principle Shatsky developed a rounded theory which explains the fundamental laws governing the composition and interrelationship of different tectonic structures. The map shows the tectonic development of a large portion of the earth's crust and permits important conclusions to be drawn with regard to the regularities of this development.

Shatsky's map is being used extensively as guide in prospecting for various minerals and as a basis for compiling metallogenic, seismological and neotectonic data for other charts. The map was approved by the 20th International Geological Congress as the scientific basis for charting the European continent and the world.

Professor Konstantin Gorshenin of the Omsk Institute of Agriculture received a Lenin Prize for his study, *Soils of Southern Siberia*. The book, a result of 40 years of work, gives a geographic and genetic description of soils, their origin, chemical and mechanical composition, and physical and chemical properties. The study is being used extensively by agronomists working to open up the great expanse of virgin lands in Siberia.



CLIMATOLOGIST MIKHAIL BUDYKO

Climatology

Mikhail Budyko, director of the Central Geophysical Observatory, received a Lenin Prize for his study on distribution of heat over the surface of the earth, a new field of climatology.

Solar radiation is the major source of heat for nearly all natural processes occurring in the atmosphere, the hydrosphere, and the upper layers of the lithosphere and is, of course, a primary factor in agriculture. The important study made by Budyko and his team of scientists will help solve many theoretical problems and will serve in such practical areas as weather forecasting and land reclamation.



ECONOMIST STANISLAV STRUMILIN

Historical Studies

Academician Stanislav Strumilin won a Lenin Prize for his large *History of the Iron and Steel Industry in the Soviet Union*. Its first volume, for which the author received the award, traces the development of the country's iron and steel industry from its inception to 1860, when the first factories employing hired labor appeared. This is a thorough study that covers a key sector of the economy tremendously influencing the development of the country's productive forces.

Jan Endzelin of the Latvian Academy of Sciences won a Lenin Prize for his comprehensive *Letish Grammar* which gives a de-

Continued on next page

PHILOLOGIST JAN ENDZELIN



Lenin Prize Winners of 1958

Continued



METALLURGIST IVAN BARDIN

scriptive and historical survey of the phonetics, word-building, morphology and syntax of the language. The work incorporates material on dialects and studies the relationship to Lettish of other Baltic languages and of Slavonic and the Indo-European tongues.

Industry

A Lenin Prize was awarded to Vasili Kedrinsky, Alexei Barsukov and Demyan Zakhar'yev of the Experimental Research Institute of Metal-Cutting Machine Tools and to chief technologist Dmitri Zagryazkin of the Stankokonstruksiya Machine-Tool Plant for designing and organizing the industrial production of a set of highly efficient automated machine tools for cutting bevel gears.

The original system on which these tools are based makes them superior, both from the economic and technical viewpoint, to the famous Glisson-made tools of the USA. The new Soviet machine tools have been highly rated at 14 international exhibitions in Europe, Asia and America and are now widely used in the Soviet Union and also in some foreign countries.

Of great importance for the development of the Soviet iron and steel industry are the first industrial installations for continuous steel pouring worked out under the direction of Academician Ivan Bardin by Nikolai Smelyakov, Nikolai Komandin, Konstantin Korotkov, Nikolai Mayorov, Alexander Khripkov, Mikhail Gritsun, Georgi Gursky and Vladimir Kazansky of the Krasnoye Sormovo Metal Plant and the Novotulsky Iron and Steel Mills. Their installations for which they were

awarded a Lenin Prize eliminate several labor-consuming operations, largely automate steel pouring processes and radically improve working conditions.

Yakov Gumennik and Mikhail Kovalchuk of the Baidayevskaya mine in the Kuzbas coal basin in Siberia received a Lenin Prize for a fast tunnelling combine. It is used in sloping coal seams of average thicknesses on the most labor-consuming and expensive operation of opening and preparing the seams. This combine reduces tunnelling time to a fraction of a sixth or a tenth.

Academician Mikhail Kostenko and Professor Valentin Venikov of the Moscow Power Institute received a Lenin Prize for designing electro-dynamic models for the practical study of large power grids, super-long-distance electric transmission lines, power installations and power station equipment. The models have been used to train hundreds of engineers.

A Lenin Prize was awarded to Fyodor Gerasimov of the State Optical Institute and to Dmitri Chekhmatayev for developing methods of manufacturing flat and concave precision reflecting diffraction gratings that are rated by authorities as the most perfect of their kind. They are used in highly efficient spectral instruments of original design.

A very important invention making a radical change in construction techniques for steel tanks is a new method that employs rolled steel sheets. This has brought a Lenin Prize to Yevgeni Ignatchenko, Georgi Rayevsky, Yevgeni Alexeyev, Vsevolod Didkovsky, Oleg Ivantsov, Victor Korniyenko, Vladimir Lyakhov and Bogdan Popovsky. Welding is now done automatically, tank assembly is mechan-

MACHINE-TOOL DESIGNER VASILI KEDRINSKY



MINING ENGINEER YAKOV GUMENNIK



ized and conveyor-line production has cut labor time to a fraction.

Fine Arts

For his bronze statue of the great Russian poet Alexander Pushkin which now stands on a granite pedestal in the square fronting the Russian Art Museum in Leningrad, the sculptor Mikhail Anikushin was awarded a Lenin Prize. The statue, which seems an organic part of the classical architectural composition of the square, is acknowledged as one of the most notable examples of monumental Soviet sculpture.

Another Lenin Prize was won by Georgi Tovstonogov and Yuri Tolubeyev of the Leningrad Pushkin Drama Theater for the production of Vsevolod Vishnevsky's *Optimistic Tragedy*. The play's theme is the immortality of the revolutionary idea. Georgi Tovstonogov, the director, built an extraordinarily compelling production in which individual characters and mass scenes are blended into a single magnificent dramatic unit. The most striking of the many brilliant portrayals was Yuri Tolubeyev's *Vozhak*.

The new ballet *Othello* presented by the Tbilisi Opera and Ballet Theatre, besides its merit as an outstanding artistic contribution, evidences that national Georgian art has come to maturity. Vakhtang Chabukiani was

VAKHTANG CHABUKIANI IN THE ROLE OF OTHELLO



SCULPTOR MIKHAIL ANIKUSHIN

awarded a Lenin Prize for his many-sided contributions—he was producer, choreographer, librettist and danced the title role.

For the *1905 Symphony*, his eleventh, Dmitri Shostakovich was awarded a Lenin Prize. A composer of great depth and passion, Shostakovich turns to the large themes of past and present history for his inspiration. His *Ten Choral Poems*, set to the lyrics of poets of the revolution, his incidental music to the films *Great Citizen*, *Man With the Gun* and *Maxim*, all show this characteristic, a consistent development which is further demonstrated in his *1905 Symphony*, with its epic breadth and its beautifully realized musical expression of the first Russian Revolution. ■



Statue of Russian poet Alexander Pushkin, which won a Lenin Prize for its sculptor.

COMPOSER DMITRI SHOSTAKOVICH



American History Studied in the Soviet Union

By Leon Bagramov
Master of Science (History)

"THE Lincoln Highway crosses the North American continent from east to west, from the Atlantic to the Pacific, and a traveler driving along the road sees a vast country in all its diversity."

This is the beginning paragraph of a description of the United States in *Hello World*, a popular illustrated children's book recently published in the Soviet Union.

The description goes on, "This big and versatile country was the first colony to separate from Britain and to fight for independence in one of the few great wars of liberation, a truly revolutionary war. . . ."

"Americans are a courageous, determined, energetic and businesslike people who know the value of time and work. With their labor they have built the most ingenious machines, erected hundred-story buildings, plowed up the endless expanse of the prairies and harnessed mighty rivers."

Part of the Curriculum

Soviet school children study American history and traditions, the significance of such national holidays as July 4, the achievements of America's great men, as they do the history and traditions of other nations, to learn to appreciate the contributions that different peoples have made in building our contemporary world.

They are introduced to American history early in the primary grades when they study world geography. In modern history, studied



in the eighth grade, special attention is given to the American Revolution and the Civil War, and to such leading figures as Washington, Jefferson, Franklin and Lincoln. In the senior grades twentieth century American history is taught.

In the history departments of the colleges and universities, American history has a prominent place, with both general and specialized courses taught and seminars held on the salient historical periods.

On the college level there is a varied selection of texts. Being prepared for press now is a two-volume work *An Outline History of the United States*. Considerable space is devoted to American history in a ten-volume *World History* in publication by the USSR Academy of Sciences. The first volumes in

this large work have already come off the press. For 1961 publication, historians specializing in American history are preparing a book to commemorate the Civil War centennial.

The writings of American historians Charles Beard, Samuel E. Morison, Allan Nevins, Arthur Schlesinger, Frederick J. Turner—to mention only a few—are well represented in Soviet libraries. The writings and speeches of the American founding fathers, of statesmen past and present, and such publications as the *Annals and Proceedings of the U.S. Congress*, *The Congressional Record*, *The Congressional Globe* and published documents relating to foreign affairs, census and other contemporary records are available to readers and students. Soviet libraries and research

institutes subscribe to practically all American history journals.

A number of books in the field by American writers have been published in Russian translation, among them Faulkner's *History of the National Economy of the U.S.*, Bogart's *Economic History of the United States*, Simon's *Social Forces in American History*, Foster's *Outline Political History of the Americas*.

Soviet Scholars on American History

Soviet scholars specializing in the history of the United States cover all the various events and in addition consider especially significant the struggle for the American democratic ideal in the three periods that played a major role in American social and economic progress—colonial times, the Revolution and the Civil War.

In his *Outline History of the United States* Academician Alexei Yefimov develops the view, one he shares with other Soviet historians, that the American Revolution was a great liberating force, a just war for independence, and that the Declaration of Independence was a progressive document of enormous significance, embodying as it did the idea of the people's sovereignty, the idea that the people must shape their own common destiny.

On the Civil War, Soviet historians hold the view that it, too, was a progressive war which cleared the way to national economic and social progress by abolishing chattel slavery and emancipating the Negro.

Professor A. Somin in his published lectures on the history of the United States discusses the westward expansion movement. Commenting on the Homestead Law passed during the Civil War which gave 160 acres of public land to any homesteader who agreed to farm it for five years, he holds the opinion that it was of great importance for the development of the American economy.

Soviet scholars do not subscribe to the "great man" theory of history. It is the people and not individuals, whether kings, military leaders or statesmen, who play the decisive role in history. Soviet historians, therefore, emphasize the study of popular movements as the key to an understanding of events.

This is by no means to deny the important, frequently crucial role of the individual in affecting his time, whether for progress or reaction. Inevitably there is an interplay, with the times calling for the leader and the leader influencing his times.

America's Great Men Studied

The 250th birthday of one such leading American figure, Benjamin Franklin, was widely observed in the Soviet Union two years ago. Historian Irina Belyavskaya, in her article "Benjamin Franklin: Revolutionary Leader" published in the journal *Problems of History*, characterized him as an eminent political thinker, leader and scientist, whose knowledge, talent as organizer, fearlessness and incorruptibility "made him one of the most prominent and respected public figures in North America."

At a commemorative meeting to celebrate the 250th anniversary of his birth, arranged



A recitation in United States history, a required subject, in the 8th grade of Moscow School No. 635. Students in Soviet colleges and universities make a more detailed and thorough study of the subject, with history departments offering many courses covering special aspects of America's development.

by the USSR Academy of Sciences, the eminent physicist Pyotr Kapitsa read a paper on Franklin's pioneering labors in science which he closed with this tribute: "As one studies Franklin's life, one understands why there is so much admiration and so universal a respect for the achievements of this great man America gave to the world."

Russian science takes a measure of pride in the fact that in 1789 Benjamin Franklin was elected an honorary member of the St. Petersburg Academy of Sciences for his many contributions to science, the first American member to be elected to that learned body. The minutes of that 1789 meeting include, "Ballots cast for this illustrious and honorable scientist were all affirmative and he was elected unanimously."

Abraham Lincoln, both as president and man, has been the subject of study by many Soviet specialists in American history. Robert Ivanov, who is writing a monograph on the Civil War president, says that he was attracted most of all by Lincoln's wisdom and humanity and his embodiment of the finest qualities of the American character.

Understandably, Soviet historians are particularly interested in Soviet-American relations as they developed historically. Historical evidence indicates that Russian and American interests converged at many critical periods and that relations were peaceful and mutually beneficial.

Russia Helps the Young Republic

During the American Revolution Russia's stand favored the rebelling colonies. In the historical archives in Moscow is the original letter written September 1, 1775, by George III to Catherine the Great asking for 20,000 Russian troops to help put down the rebellion of

his American subjects. Catherine's reply was a polite but firm refusal.

Of even greater importance to help win American independence was Russia's decision. *Continued on next page*

Historian Robert Ivanov is writing a monograph on Abraham Lincoln's life. U.S. history, both past and current, is the theme of many books.



1958
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American History Studied in the Soviet Union

Continued

laration of "armed neutrality" which was adhered to by Denmark, Sweden, Holland, Prussia, Portugal and Sicily. Aimed to halt the piratical attacks of British men-of-war and privateers on neutral commercial vessels on the high seas, the declaration, Soviet historians note, at the same time tacitly acknowl-

edged the colonies as a belligerent, a virtual recognition of independence.

During the Civil War the many British and French efforts to get Russia to intervene on behalf of the Confederacy, a goal toward which British diplomacy was directed, were refused. Russia wanted no dismemberment of the United States. Soviet historian A. Malkin in his book *The American Civil War and Czarist Russia* concludes that "while Russia did not thwart the plans for British intervention in the United States, she did, in effect, halt their realization; she checked the actions of Britain and France."

American readers will be interested to note that in 1863, as a consequence of friction between Russia on the one hand and Britain and France on the other, two Russian fleets were sent to the United States, one to the Atlantic, the other to the Pacific. On arrival in the ports of New York and San Francisco, they were cordially welcomed by the authorities and the populace. During the visit the Russian ships twice exercised pressure on Confederate warships by direct threats of military action. *The History of Diplomacy*, a work of a group of Soviet historians, points out that "the benevolent stand taken by Russia during the Civil War played no small part internationally in helping the United States."

The United States on Napoleon's Invasion

As for the American position with regard to Russia, Soviet historians stress the friendly sympathy of the United States at the time when Russia was fighting the Napoleon invasion. American feeling during that crucial year of 1812 was entirely with Russia.



A memorial meeting honoring Walt Whitman hears a lecture by writer Kornei Chukovsky.



Academician Jan Peive, chairman of the Soviet of Nationalities of the USSR Supreme Soviet (at the left), and Academician Dmitri Nalivkin inspect a recent exhibit of American and British technical books in Moscow.



The 30th anniversary of the death of Luther Burbank, American horticulturist, was commemorated by the Soviet scientific world. Accomplishments of Americans in all fields of endeavor are studied by Soviet history students.



That sympathy is expressed in a letter that John Quincy Adams, first ambassador to Russia and sixth President of the United States, wrote from St. Petersburg on November 24, 1812. While the final outcome of the war was not yet determined, he said, there was no doubt in his mind that it would be as disastrous for France as it would be glorious for Russia. He went on to say that Russia's comportment in a time of severe trial would raise her high in the estimation of mankind.

Adams sharply ridiculed the myth then beginning to circulate and later widely current that it was not the Russian army and people that had defeated the invincible Napoleon but the Russian winter.

During the Crimean War of 1854-56, when a coalition of Turkey, Britain, France and Sardinia attacked Russia, the United States followed a policy of benevolent neutrality. In several cases it gave aid to Russian merchant vessels caught by the war in American waters.

Current Developments

Back in the old days there was a lack of research on the history of the United States in our country. While the study of French or British history had a long tradition, the study of American history had to be started practically from scratch and for the most part the work done in this field is of Soviet origin.

Not only students in schools and colleges but the public in general displays great interest in the United States, in its history and current developments. This helps explain the wide circulation of books by American writers, both past and present, and the popularity of all kinds of lectures, concerts and exhibitions on the United States.

Soviet scholars have the same serious approach to current developments in American history that they have to those of the past. They stress the similarity of interests of the two peoples and show how peaceful collabora-



This Moscow University student is reading *The Genius* by Theodore Dreiser. More than 77 million books by American authors, both fiction and nonfiction, have been published in the Soviet Union.

tion between them has always proved mutually beneficial.

To account for the larger numbers of Soviet scholars working in American history today and their plans for intensive study in the field are two factors. There is, of course, the intrinsic interest of scholars in the rich store of Russian-American historical documents which

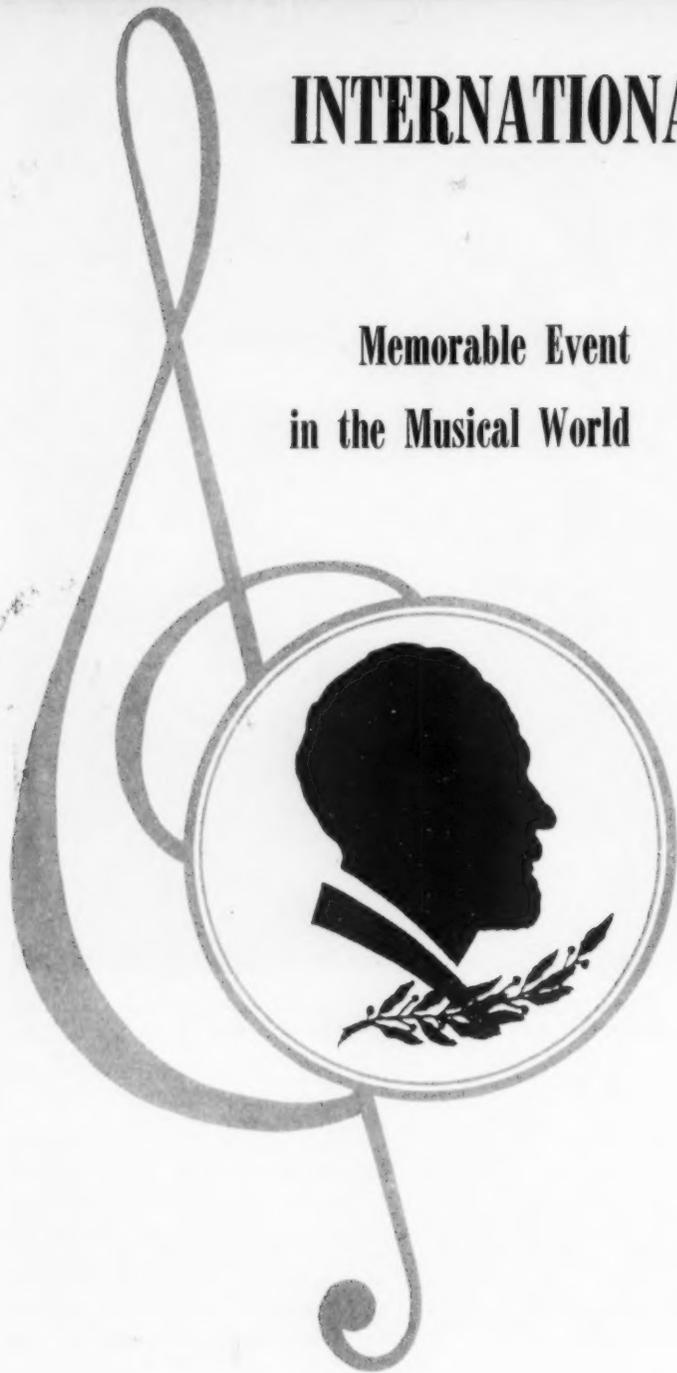
have barely been tapped for research. Equally responsible, however, is the general interest of Soviet people—scholars among them—in things American and the pervasive feeling that there is a large area of friendship and common interest which the two countries have had historically upon which to build a strong and enduring present and future friendship. ■

STUDENTS AT ONE OF MOSCOW'S INSTITUTES LISTEN TO CONCERT DEVOTED TO MUSIC BY AMERICAN COMPOSERS AS PART OF A COURSE ON CULTURE IN THE UNITED STATES.



INTERNATIONAL TCHAIKOVSKY CONTEST

Memorable Event in the Musical World



THE first International Tchaikovsky Piano and Violin Contest held in Moscow in March and April is now musical history, but its success and the brilliance of the contestants will long remain a lively topic in cultural circles the world over.

Dmitri Shostakovich, who acted as chairman of the Organizing Committee for the event, noted that it was arranged "to honor a composer whose music belongs to all mankind." He expressed his belief that the Tchaikovsky contest, as any international music competition, would strengthen and extend friendly ties among musicians of various countries and help promote the development of world musical culture.

The aim of the contest was to foster young talent, and the age limits of the contestants, therefore, were from eighteen to thirty. The auditions, which were held in the Grand Hall of the Tchaikovsky State Conservatory, drew the entries of 36 pianists from 13 countries and 24 violinists from 12 countries.

The program of the contest was extensive and difficult. The participants had to play one Tchaikovsky piece, a number of complex works by Russian and foreign classical composers, and compositions of contemporary Soviet and foreign composers. In addition, each was asked to play two unfamiliar scores.

Emil Gilels of the Soviet Union was chairman of the jury for the pianists and its members were 17 distinguished musicians from Great Britain, Bulgaria, Brazil, Austria, Italy, Rumania, Hungary, France, Belgium, Czechoslovakia and Poland as well as the Soviet Union. The jury for the violinists was headed by David Oistrakh of the Soviet Union and was also composed of internationally known artists from a similarly wide group of countries.

Before the contest started, it had been decided to award prizes for the first eight places in both the piano and the violin competitions. First prize carried with it a gold medal; second prize, a silver medal; third, a bronze medal; and the others, certificates of honor. All prizes included cash awards. However, as the competition proceeded, it was soon realized that many more worthy young musicians had gathered in Moscow than had been anticipated, and the number of prizes was increased.

NIKITA KHRUSHCHEV MEETS CONTESTANTS AT A KREMLIN RECEPTION GIVEN BY THE USSR MINISTER OF CULTURE.



AMERICAN PIANIST Reflects on His Victory

VAN CLIBURN
United States
First Prize

It was a wonderful contest both because of the participants, all excellent young pianists, and because of the panel of judges, which included many of the world's best musicians. My first prize brought me joy I'd never known before.

I began to play the piano 20 years ago at the age of three, and until I was 17 I studied under my mother. In 1954 I graduated from the Juilliard School of Music in New York. There I studied under Rosina Lhevinne, a graduate of the Moscow Conservatory and the widow of the Russian musician and teacher Joseph Lhevinne who was a close friend of Rachmaninov's.

Tchaikovsky is one of my favorite composers. I performed his *First Piano Concerto*



23-YEAR-OLD TEXAN VAN CLIBURN, GRADUATE OF THE JULLIARD SCHOOL OF MUSIC, WON FIRST IN PIANO.

when I was 12. In my short life as a pianist I have come to love the music of that genius. I also love Rachmaninov.

It's hard for me to realize that I have actually walked down the corridors and into the classrooms of the Moscow Conservatory, where Tchaikovsky's spirit is still alive and music so loved and appreciated, where audiences are so grateful and to perform is such a tremendous pleasure. I am glad to have had the chance to visit the country of great musicians whose art is so revered in America.

I have never before had occasion to participate in such a splendidly organized contest as this one. Everything was taken care of, down to the smallest detail: the rehearsals, the schedule and the timing of performances. It was a

genuine pleasure to play with an orchestra conducted by the inspiring Kirill Kondrashin.

As for the reception given us by the Soviet people, I can say that I have never come across an audience which takes such joy in a performer's successes, gives him so much support and actually lives and breathes with the player, in his "rhythm." I am pleased to find that the Russians are excellent connoisseurs of music and performance, that they are so responsive.

My victory at the Tchaikovsky competition opens up a new period in my life. I want to assure my Soviet friends and the wonderful public that listened to me with such attention and consideration that I shall work constantly to improve my playing.



ACKNOWLEDGES WARM APPLAUSE FROM AUDIENCE.



GREETED BY THE PIANO JURY CHAIRMAN, EMIL GILELS.



SPEAKS TO SOVIET PIANIST VLADIMIR ASHKENAZI.

RECEIVES AMERICAN FRIEND'S CONGRATULATIONS.





GIFTED PIANISTS PLACED IN LIMELIGHT

By Emil Gilels
Chairman of the Piano Competition Jury

In paving the way for a tradition of Moscow-held international contests, the musical circles of our country have striven to make the Tchaikovsky competition worthy of the great Russian composer whose name it bore. The piano program was so devised as to offer each musician every opportunity to reveal his creative abilities to the full, both in classical and modern compositions.

Classical Russian and modern Soviet music was represented in this contest on a far larger scale than in any other international competition, and we were glad to see the warm appreciation of the contestants for the musical culture of our country. Bach, Mozart, Beethoven, Schumann, Liszt, Chopin and other great West European masters were naturally included in the program, and our guests also performed some pieces by contemporary foreign composers.

The diversity of the program made the contest an event of special interest for all music-lovers. They flocked to the concerts, and the enthusiasm of their response showed how much they enjoyed the performances.

As in every contest, new musical talent was discovered. We were happy to acknowledge the success of two new schools of piano—the Chinese and Bulgarian. This is not the first time the pianists of China

have won victories at a major musical competition. The pianists of Bulgaria have also come a long way. One of the prize-winners—the 18-year-old Bulgarian girl Milena Mollova—was the youngest participant in the contest.

The level of performance was so high during the second round that the jury decided to award all the contestants with certificates and diplomas and increase the number of participants in the third round from eight, as originally planned, to nine.

After three rounds of intense and exciting competition, the winners were finally chosen. First prize was awarded to Van Cliburn (United States), a musician of rare gifts and truly unlimited possibilities; second prizes went to Lev Vlasenko (Soviet Union) and Liu Shi-kun (People's Republic of China); third prize to Naum Shtarkman (Soviet Union); fourth to Eduard Miansarov (Soviet Union); fifth to Milena Mollova (Bulgaria); sixth to Nadia Gedda-Nova (France); seventh to Toioaki Matsuura (Japan); and eighth to Daniel Pollack (United States). These were the best of the contestants. But so many other really fine pianists participated that several diplomas of honor were awarded in addition to the prizes originally planned.

A final word about another "participant" in the contest—our Soviet music-lovers who filled the Grand Hall of the Tchaikovsky Conservatory to overflowing. The audience showed an exceptional interest in the contest and followed the recitals of the young musicians very closely. The rule forbidding applause was frequently broken as the hall virtually rocked with the ovations of the delighted listeners.

As I heard the performances of the contestants, I could not help thinking of the inexhaustible possibilities that lie in the world's treasure-house of talent. I am sure that contests of this kind will help reveal these riches and contribute to international cultural collaboration.



Emil Gilels had applause for each of the piano contest winners as the jury's decisions were announced.



Piano contest winners (left to right): Naum Shtarkman (USSR), third; Van Cliburn (USA), first; Liu Shi-kun (People's Republic of China) and Lev Vlasenko (USSR), both second.



LEV VLASENKO

Soviet Union
Second Prize

This was a unique contest as far as the level of performance was concerned. Never have I heard a more talented pianist than Van Cliburn.

Some very fine musicians arrived from Japan and China. This is important because we had not heard much about their pianists. I am very happy to share second place with Liu Shi-kun.

All of the contestants got to know each other and became good friends during the contest. We hope that this gives us the right to believe that we musicians have contributed a bit to the cause of establishing mutual understanding among the peoples of the world.



LIU SHI-KUN

People's Republic of China
Second Prize

The Tchaikovsky Piano Contest has played a big role in my short creative life. It gave me a chance to become acquainted with the schools of piano of several countries and the playing of many splendid musicians.

The jury headed by Professor Emil Gilels was objective in its decisions. There is no doubt that Van Cliburn deserved first prize. I am proud and happy to share second place with such an excellent pianist as Lev Vlasenko.

The recognition and encouragement that winning second prize has given me are an inspiration to work still harder. I shall never forget the warm reception I received from Moscow audiences.



TOIOAKI MATSUURA

Japan
Seventh Prize

Japan has neither a school of piano of its own nor such great authorities as you have in the Soviet Union. Although I have had some experience as a concert pianist, the contest has shown me once again how necessary it is for a musician to study and improve his skill throughout his life. I met and heard many distinguished musicians here and feel that this visit has been most instructive.

In spite of the fact that I am not so young, I want to go to Europe after the contest—to Berlin, Vienna and Paris—and study under the famous professors. But most of all I would like to study in the Soviet Union to improve my mastery of the piano.



GALLERY OF VERSATILE AND INGENIOUS TALENTS

By Svyatoslav Rikhter

Member of the Piano Competition Jury



BEST WISHES FOR FURTHER SUCCESS IN MUSIC FROM PIANIST SVYATOSLAV RIKHTER.

My impressions of the piano contest must begin with Van Cliburn, the young American who won first prize and the gold medal. It was obvious the moment he began to play that a genuine artist was seated at the piano. As the competition proceeded, his performance confirmed it.

Of the things Van Cliburn played in the three rounds, I should like to make special mention of the perfectly executed Chopin's *Etude in A Minor*, Liszt's *Twelfth Hungarian Rhapsody*, a fugue from a sonata by the American composer Samuel Barber, Kabalevsky's *Rondo* and, particularly, Rachmaninov's *Third Piano Concerto*, in which the range and power of Van Cliburn's unique talent was revealed in a remarkable interpretation that amazed all who heard it.

It would be wrong to expect anyone to have played the entire program without a flaw. Van Cliburn's best Tchaikovsky was the *F Major Variations*, while his rendition of the *G Major Grand Sonata* was highly debatable, and so also, although to a lesser degree, the *First Concerto*. The same might be said of his interpretation of Chopin's *F Minor Fantasy*.

But anything can be forgiven a pianist like Van Cliburn. He is one of those beginning artists who play "themselves" rather than the meaning the composer put into the music, until years of hard work bring maturity and a feeling for style, so important for the artist. I consider Cliburn a pianist with the talent of a genius. His sensitive musicianship ennobles everything he plays. His victory in such a difficult contest deserves to be called brilliant.

Lev Vlasenko (Soviet Union) and Liu Shi-kun (People's Republic of China), who shared second place and were awarded silver medals, are very gifted pianists. Lev Vlasenko gave a magnificent performance of Liszt's *Sonata in B Minor*, an exceedingly difficult work both in conception and technique. His fine feeling for the form and style of both Liszt's sonata and Shostakovich's *Prelude and Fugue in D Minor*, extremely different compositions, make me certain that Vlasenko will develop into an outstanding musician.

Liu Shi-kun's talent is remarkably harmonious. His renditions seem to be tinted with Chinese coloring, and the delicacy of his finger work is simply amazing. I think he was best in Mozart's *G Major Sonata*, the *Third Sonata* by Kabalevsky, and Liszt's *Sixth Hungarian Rhapsody*.

Naum Shtarkman (Soviet Union), who took third prize and a bronze medal, wins his audience with the simplicity and naturalness of his playing. The expressiveness of his phrasing is reminiscent of human speech. No one in the second round played Tchaikovsky's *Grand Sonata* as well as Shtarkman. His rendition of Ravel's *Jeux d'Eau* was unmatched in delicacy and feeling. However, he failed to come up to his usual standard in the third round.

Eduard Miansarov (Soviet Union), who placed fourth in the contest, was at his best in

Rachmaninov's *Rhapsody on a Theme by Paganini* and Prokofiev's *Sarcasms*, as well as the second movement of Mozart's *A Minor Sonata*. He played with the firm and audacious technique of a virtuoso.

Admirable precision and clarity distinguished the playing of 18-year-old Milena Mollova (Bulgaria). Many of her interpretations were immature, but she has individuality, and that is important. Fifth place was a big achievement for her.

Nadia Gedda-Nova (France), who placed sixth, showed that she is a gifted pianist of the classical school. She was one of the few contestants who conveyed the simplicity of Mozart's sonatas and the lyricism of Tchaikovsky's variations. It is a pity that after her excellent rendition of the very difficult Shostakovich *Prelude and Fugue in D Flat Major*, displaying perfect mastery of technique, she did not give enough attention to Rachmaninov's *Second Piano Concerto*. This considerably reduced her chances in the final round.

Toioaki Matsuura (Japan) and Daniel Pollack (United States), who won seventh and eighth prizes respectively, are experienced concert performers. My preference is for Pollack, a professional player with a finished style. He did well with Barber's interesting sonata and the first movement of Prokofiev's *Seventh Sonata*.



TOIOAKI MATSUURA, EXPONENT OF JAPAN'S SCHOOL.



PIANIST DAN POLLACK (USA) PLACED AS NO. 8.



NADIA GEDDA-NOVA OF FRANCE IMPROVISES HERE.



VIOLIN COMPETITION JURY INCLUDED THE WORLD'S LEADING MUSICIANS. SHOWN AT THE LEFT ARE CHAIRMAN DAVID OISTRAKH (USSR) AND EFREM ZIMBALIST (USA).



YOUNG VIOLINISTS' ABILITY WON THEM RECOGNITION

By David Oistrakh

Chairman of the Violin Competition Jury

Based on my experience as both judge and participant in many a violin contest, I would say that the program of the Tchaikovsky competition was one of the most difficult I have so far encountered. I must also pay tribute to the contestants. They were not merely gifted musicians but accomplished artists.

Valeri Klimov (USSR), who won first prize, has amazing harmonic gifts. His distinctive qualities as a performer are highly expressive and flexible sound, scintillating technique, a crystal-clear tone and volitional rhythm. His rendition bears the imprint of nobility and great spiritual force. Victor Pikaizen (USSR), who won second prize, is a mature artist. Notwithstanding his youth, he is well known to his audiences. He has been performing on the concert stage since the age of 13 and proved to be a brilliant virtuoso with a temperament I am inclined to call "fiery."

The judges and discriminating Moscow audiences were captivated by the talented Rumanian violinist Stefan Ruha, winner of the third prize, an artist with a distinctive style of his own. Although his interpretation of Tchaikovsky was quite original and very different from ours, it was nevertheless convincing.

The next three prizes were awarded to the talented Soviet violinists Mark Lubotsky, Victor Lieberman and Valentin Zhuk. Each is endowed

with a brilliant style and maintained a high level of performance in all three rounds.

Joyce Flissler of the United States, who won seventh prize, is a musician of impeccable taste and high accomplishment who has had considerable experience in playing. She won her audiences with the warmth of her tone and her expressive phrasing. The music seemed to blossom under her bow.

The young Soviet violinist Zarya Shikhmurzayeva, eighth prize, is a lyrical performer whose rendition is marked by romantic ardor.

I am unable to review the performances of all the contestants in detail, but I must say that each one merited the highest praise. Among those who distinguished themselves were Mary Beryl Kimber of Australia; our own J. Ter-Merkeryan and N. Beilina; E. Kamillarov and G. Badev of Bulgaria; and T. Kozigian of Rumania.

The young artists representing the Asian countries—Piak Ko San (Korea), Yang Ping-sung and Ling Ko-hang (China)—were very good. The fact that they qualified for the second round in such a difficult competition can well be considered a victory. I am sure that we shall see their names among the winners of future competitions.

This was really an international contest. Not only did the contestants come from many countries but so did the great musicians who formed the panel of judges. It is wonderful what a wealth and variety of colors were born of different national interpretations and different individual conceptions. It might be said that Tchaikovsky was heard at the contest in many tongues.

The competition revealed what enormous reserves of young artists there are in the world and helped to bring several with outstanding talent to the attention of music-lovers. It did something else, too, in providing the opportunity for musicians of different countries to get to know each other and become friends.

EFREM ZIMBALIST WITH VIOLINIST GALINA BARINOVA, A USSR JURY MEMBER.



CORDIALITY IMPRESSED VETERAN U.S. MUSICIAN

Professor Efrem Zimbalist

Vice Chairman of the Violin Competition Jury

The Moscow Tchaikovsky competition, in which no small number of talented musicians took part, will undoubtedly provide them with brilliant artistic futures. I was very happy to hear the violinists from many countries of the world.

I must say that Soviet musicians are furthering the best traditions of the Russian school of violin. There can be no doubt that Oistrakh, Kogan and the other remarkable masters will train many more fine musicians. I am glad that a spirit of complete understanding, cordiality and real friendship existed among the members of the jury.



VIOLIN COMPETITION WINNERS: V. KLIMOV (USSR), FIRST; V. PIKAIZEN (USSR), SECOND; S. RUHA (RUMANIA), THIRD.



VALERI KLIMOV AND HIS JUBILANT WIFE RAYA.



BESIEGED BY EXCITABLE AUTOGRAPH HUNTERS.



VALERI KLIMOV

Soviet Union

First Prize

The participants—both Soviet and foreign—displayed a high level of performance. The contest was a great musical event, and its significance was redoubled by the presence of eminent musicians from many countries on the panel of judges. I am sure that we have all made many new friends.



STEFAN RUHA

Rumania

Third Prize

The cordial reception accorded me in Moscow has made me very happy. Of course I was very nervous, especially when I played Tchaikovsky. Although I have performed many of his works—he is my favorite composer—it was a great responsibility to play them here, in the country of his birth.



JOYCE FLISSLER

United States

Seventh Prize

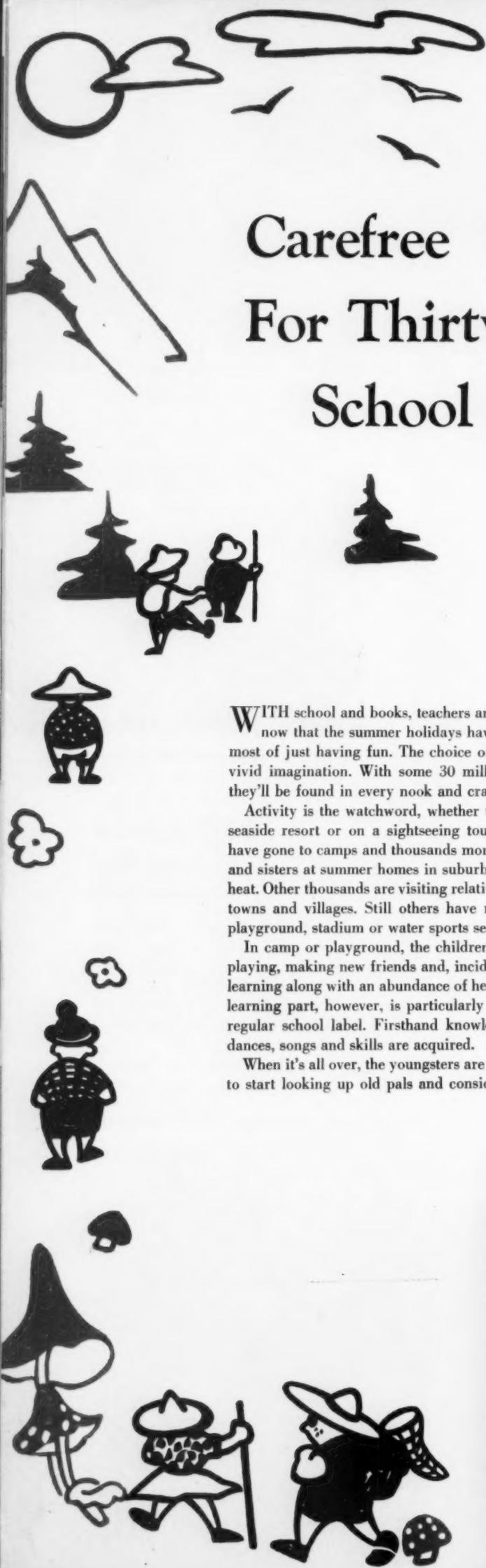
The contestants in the violin competition were all very good. I liked the Soviet musicians Victor Pikaizen and Zarya Shikhmurzayeva best. They are real masters. I am glad I came to Moscow. I am sure I not only will learn a lot here, but will make many good friends.

COMPETITION PARTICIPANTS MADE A PILGRIMAGE TO TCHAIKOVSKY'S HOME, NOW A NATIONAL MUSEUM.



VIOLIN JURY CHAIRMAN OISTRACH GREETS JOYCE FLISSLER.





Carefree Vacation For Thirty Million School Children

WITH school and books, teachers and classes already a hazy memory now that the summer holidays have begun, youngsters are thinking most of just having fun. The choice of things to do is as wide as their vivid imagination. With some 30 million of them now out of classes, they'll be found in every nook and cranny of the country.

Activity is the watchword, whether the holidays are being spent at a seaside resort or on a sightseeing tour. Thousands of school children have gone to camps and thousands more are with their parents, brothers and sisters at summer homes in suburban areas removed from the city's heat. Other thousands are visiting relatives in rural regions, in the smaller towns and villages. Still others have remained in the cities, attending playground, stadium or water sports sessions under coaches.

In camp or playground, the children of various age groups are busy playing, making new friends and, incidentally, absorbing a good deal of learning along with an abundance of health-giving sun and fresh air. The learning part, however, is particularly easy because it does not bear a regular school label. Firsthand knowledge of nature, new games and dances, songs and skills are acquired.

When it's all over, the youngsters are in good physical shape and eager to start looking up old pals and consider returning to school.



Both the skipper and helmsman are schoolboys aboard a motor ship in Batumi on the Black Sea.

Camps with no sea or river nearby have pools to keep both the veteran and the novice splashing.



After constructing their models, these campers are off to test the skill of the builders in the sea at the Artek Childrens' Resort, one of the country's best known, located in the Crimea.





THIS CAMP ON THE BROAD ESTUARY OF THE AMUR RIVER IN THE FAR EAST OFFERS MANY ATTRACTIONS, NOT THE LEAST OF WHICH ARE THRILLING INTER-CAMP CHESS MATCHES.

The children practice new tunes to the accompaniment of an improvised trio. Songs and dances learned at camp make up the program for the closing concert given by the youngsters.



Boys of all ages go out for soccer, and the camps provide trained coaches and all equipment for the game. Many stars of big teams got their first taste of sports at summer camps.



What better sport than a good rod, an old pal and a knowledge of just where the big ones hide?



Dance, choral, dramatic and a variety of hobby circles are the backbone of busy camp life.



1958 UN

Carefree Vacation
For Thirty Million
School Children *Continued*

FOLLOWING THE SUMMER ACTIVITIES OF
ONE HIGH SCHOOL CLASS

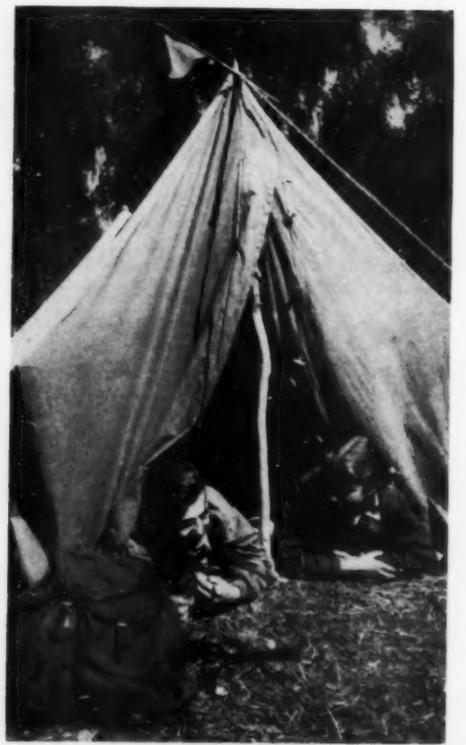


When the semester ended for the seventh grade class of School No. 4 in the old Russian city of Oryol, these boys lost no time getting out a map to study routes for their summer trip.

Another group from the class decided upon an excursion on the river. Their boats were loaded with everything from food to tents, and they were off on an adventure long to be remembered.



Roughing it in the wide open spaces found adherents among the more independent class members.





When the shadows lengthen, there's time for a girl to record her day's impressions in a diary.

Some of the pupils chose to remain in Oryol and make daily outings to local spots of beauty.



There is croquet for the less active sportsmen, livelier games for those who prefer them, and always the excitement of just watching. Each camper finds something to suit his taste.

Tournaments and contests in all kinds of sports are included in summer programs, and by the time the season is over, it's hard to find anyone who hasn't achieved skill in at least one.



Even within walking distance from their homes hikers find satisfaction in exploring the countryside, gathering specimens of flowers and stones for school and visiting places of interest.



LUMBERJACK MEMBER OF PARLIAMENT

By Adolf Antonov

A WORKING LUMBERJACK who is also a member of the national legislature may be a rarity in some countries; not so in the Soviet Union. Fyodor Tsanko is a deputy to the Supreme Soviet from the lumbering region of the Transcarpathian Ukraine. When he is not at Supreme Soviet sessions in Moscow or on his way to Kiev, the Ukrainian capital, to look into matters that concern his constituents, he is busy on his job as lumberjack in the beech forests around Svalyava.

Svalyava is a lumber town. It has the feel and smell of calked boots and sawdust. The houses, painted in all the pastel shades of the rainbow, are surrounded by the towering Carpathian mountains, with their forests of beech trees. Everyone in Svalyava makes his living from wood. Some cut it, some saw it, some transport it, some make furniture from it; the others service the woodsmen and cabinet-makers.

Looking for Deputy Tsanko, I first visited the town's community center, now under construction. It is to be finished this summer and will be called "The Woodcutter." It is a big center for this little town, but the little town has big plans.

The builders told me Tsanko was on his job in the woods. It was a busy and noisy place, this big clearing in the woods, with the ear-piercing shriek of the portable electric saws dominating every other sound. I asked the first sawyer I came across, a young chap, "Where can I find Tsanko?"

"I'm Tsanko."

But he turned out to be Yuri, one of Fyodor Tsanko's three brothers who are part of the woodcutting team that he leads. Fyodor was there too, big and broadshouldered, easy to talk to. "How's it going?" I asked.

"Not too bad," he said. "We're a bit ahead of schedule today."

One of the men laughed. "When Deputy Fyodor is around, we're usually well ahead of ourselves. He sets us a pace."

Personal History

I was asked to lunch when the gong sounded. We sat around a fire of beech blocks and ate pork roasted over the coals, baked potatoes and milk, while I sought to drag some personal history from Tsanko. He dislikes talking about himself with an almost stubborn

Continued on page 24

After 25 years in the woods, Fyodor Tsanko still prefers lumberjacking to any other work.





DEPUTY TSANKO AT A RECENT SESSION OF THE SUPREME SOVIET IN MOSCOW. BETWEEN MEETINGS OF THE PARLIAMENT, HE WORKS IN THE TRANSCARPATHIAN WOODS.



Wrestling is a favorite sport of lumberjacks everywhere. This time Tsanko (right) finds himself in the role of an observer while his pals tussle.



Visiting with his constituents takes Tsanko to distant lumber camps, where he discusses problems and receives requests sitting around a brisk fire.

LUMBERJACK MEMBER OF PARLIAMENT *Continued*

modesty, but the other lumberjacks filled in the details.

He was one of six children in a poor peasant family. When Fyodor was a child, his father had emigrated to the United States to seek his fortune, but he returned after a year with empty pockets. Fyodor, while still in his teens, went to work as a lumberjack. It was not an easy life then—long hours, hard work and little pay. Not until after the Transcarpathian Ukraine joined the rest of the Soviet Ukraine following a general plebiscite in 1945 did conditions improve. Little by little, mechanized equipment began to be used. The work became easier and wages increased. The lumberjacks got hospitals, schools, colleges and benefits unknown in the old days.

Tsanko became active in his trade union local, in its efforts to constantly improve the working and living conditions of the lumberjacks. Becoming widely known as a spokesman for his coworkers, Tsanko was chosen as their delegate to a congress of the lumber workers' union. At this session he was elected to the union's national executive committee and at the same time continued his daily work in the woods.

"How did you become a deputy to the USSR Supreme Soviet?" I asked.

"At an election meeting in 1954 the lumberjacks of Svalyava nominated me and asked the workers of the veneer and furniture factory in Uzhgorod and the chemical workers in Perechin to support my candidacy. The

Svalyava people knew me, but the others were doubtful—they thought I was too inexperienced, and to tell the truth, I agreed with them. But everybody thought it wouldn't be at all a bad idea to have a lumberjack from around here as deputy."

The others told me what he omitted—that by this time Tsanko was very well known for his work in the trade union. And after the nomination period, volunteer canvassers had no difficulty in bringing out a heavy vote for him.

"Anyway," Tsanko continued, "I was elected. Although I'm not a Party member, the local Communist Party organization supported me."

I wanted to know if the Transcarpathians had had a representative in the old Czechoslovakian parliament when they were part of that country in the thirties. In answer Tsanko said: "We were supposed to have had. No one ever saw the deputy between elections; he lived in Prague."

"We might just as well not have had one, for all the good it did us," one of the other men commented.

Deputy on the Job

To learn about Tsanko's activities as deputy, I had to talk to his constituents in Svalyava.

Vasili Pavlovich, a lathe operator in the furniture factory, told me: "Back in 1954, I was one of those who had doubts about

Fyodor as deputy. He was a fine chap, all right, honest and smart, but he didn't seem to be any better than a dozen or two other lumberjacks. But he's been doing a good job, no doubt about it. He listens more than he talks, but he has something to say when he does talk. We get regular reports from him on what he's doing and what he plans to do. He's doing all right, that 'statesman' of ours."

As if to give a concrete example, Dr. Miroslav Chaikovskiy of the town hospital told me this: "Our hospital had only five ambulances, not enough for a growing town. When we applied to the medical authorities for more, they said funds were not available. So I went to Tsanko. He got in touch with the Minister of Public Health, explained the situation, insisted that money had to be made available when medical matters were involved, and in a week we got new ambulances." And, as if to add a postscript—"At the hospital, we feel that our deputy is doing a fine job."

Georgi Dulishkovich, enthusiastic young head of the Svalyava Music School, said likewise. "People in our town had long dreamed of having a music school here. Ours is an exceptionally musical town, but how were we going to convince the Ministry of Culture in Moscow that this was so? We made an official call on Deputy Tsanko and he got us the authorization. We have 60 students in our school now."

From Fyodor's wife Maria—and his daughter Margarita, a student at the Teacher's Training School—I got a somewhat more personal judgment. "Of course we're proud of the trust shown Dad by the people. But it's no easy job, this business of being a deputy. He spends his evenings after work answering letters from citizens and his weekends at meetings. We see him at mealtime."

From other town citizens I learned that the lumberjack deputy, working in close cooperation with the village and town councils,



Tsanko (second from left) confers with members of the Svalyava Council, which often seeks his advice on what procedure to follow in solving local problems.



Mikhail Ignatich, construction superintendent of "The Woodcutter" social center, tells Deputy Tsanko how things are progressing.



EACH SATURDAY SEES TSANKO RECEIVING PEOPLE FROM HIS DISTRICT. PENSIONERS PAVEL DONCH AND DMITRI ZOZULYA CAME TO DISCUSS PERSONAL MATTERS WITH HIM.

had helped to have electricity installed in the farming village of Beryozovo, water mains laid in the town of Beregovo, a community center built in Stroinoe, a hospital in Volovets, and a school in the lumbering community of Zhdi-nyevo.

On National Matters

Aside from these and other matters of local importance, Tsanko, like all other deputies to the USSR Supreme Soviet, has been concerned with legislation that affects the whole country. He participated in action on the national economic plans and the national budgets, legislation to increase pensions, on the decentralization of industrial management, the law recently passed to change the character of the machine and tractor stations, and on matters of foreign policy and peace.

He played an especially active part in drafting the pension law adopted by the Supreme Soviet on July 14, 1956. The draft for the law was discussed for months at meetings held everywhere in the country before the Supreme Soviet met. Deputy Tsanko, as a member of the Committee on Legislative Proposals, held

meetings in various parts of Transcarpathia and received some hundreds of letters from citizens proposing changes and suggestions. Many of the amendments, formally brought to the Supreme Soviet by the deputy, were incorporated into the law which provided larger pensions for 18 million Soviet citizens.

In February 1958, the Transcarpathian lumberjacks, farmers, vine-dressers, students, doctors, teachers and trade union and Communist Party organizations all joined to nominate and re-elect Fyodor Tsanko as their deputy to the Supreme Soviet.

At an overflow meeting held in Svalyava before the election, Tsanko listened to his neighbors and constituents. Some of them had complaints to offer. Said one farmer, "Tsanko spends too much time on matters that affect lumberjacks."

Tsanko said, somewhat apologetically, "It's because I'm a lumberjack myself."

Responded the farmer, amid laughter throughout the hall, "When you're a deputy, forget you're *only* a lumberjack. You're a farmer and a doctor and a carpenter and everything else that the people of the Transcarpathian Ukraine are." ■



Tsanko helped found a music school in Svalyava. Valya Tomashevskaya is a lumberman's daughter.

FACTS AND FIGURES ON THE KIRGHIZ REPUBLIC

The Kirghiz Soviet Socialist Republic is one of the 15 Union Republics that make up the USSR. Its eastern neighbor is the People's Republic of China, and three Soviet Republics—Tajikistan, Uzbekistan and Kazakhstan—border it on the south, west and north, respectively.

Two million people inhabit Kirghizia which occupies a territory of 76,000 square miles. One-third of this area consists of mountains more than 9,000 feet above sea level. The valleys comprise only 15 per cent of the territory, but that is where two-thirds of the population is concentrated.

★ ★ ★

There are more than 500 industrial enterprises in Kirghizia, all built in Soviet times. During the past three decades the republic's gross industrial output increased 40-fold, and the number of workers, from 3,000 to 100,000. Last year more than 50,000 trained specialists were engaged in the industrial, transport and agricultural establishments.

★ ★ ★

The main industries include metal working, farm machinery, coal, oil, textiles, clothing, footwear, sugar refining and meat processing. Kirghizia had no power stations whatever before the Revolution. Now it has stations with a capacity of more than 420 million kilowatts. Many collective farms build their own power plants with the aid of state funds, and during the past 15 years the total capacity of rural electric stations has increased tenfold.

★ ★ ★

One of the features of the republic's economic development is rapid expansion of processing industries. Before the Revolution there were no sugar refineries in Kirghizia; today its refineries produce more than 100,000 tons of sugar annually. The output of canned meats has increased fivefold in the past 15 years. A meat processing plant in Frunze turns out more than 60 varieties of sausage products and 30 kinds of canned meats.

★ ★ ★

Stockbreeding is traditionally one of the main occupations in Kirghizia, but since the former nomads settled down in the past decades they have developed many new branches of agriculture.

The acreage under fodder crops has increased by seven times as compared with 1917 and now embraces almost one-fourth of the sown area. The rest of the cultivated land is under grain, sugar beet, cotton and bast crops (hemp, kenaf and jute). Cotton, for example, is grown by 177 of the 694 farms of the republic.

Three-fifths of the area sown to crops is under irrigation. The Grand Chu Canal and the Orto-Tokoi Reservoir, soon to be completed, will further extend this area. These projects will add to the present total of 400 hydrotechnical structures built with funds allocated from the national budget.

★ ★ ★

In the old days the Kirghizians used the Arabic alphabet. They had no written language of their own until 1924, when the first newspapers and books were published in the native tongue. Today Kirghizia has 98 papers and 13 magazines.

In the past three decades almost 8,000 books have been printed in editions totaling 53 million copies, and now an average of 500 books in a total of more than four million copies are published each year.

★ ★ ★

Pre-revolutionary Kirghizia was a country of almost complete illiteracy. Now compulsory seven-year schooling has long been universal throughout the republic. The gradual introduction of compulsory ten-year schooling began in recent years.

Today the republic has 1,718 schools (compared with only 107 in 1913) attended by 325,000 children studying in their native tongue. Of these, more than half are in the fifth to tenth grades.

Kirghizia has 2,500 libraries and social and recreation centers.

★ ★ ★

Before the Revolution there were no colleges in Kirghizia and only four persons had a higher education. By 1956 there were nine colleges with an enrollment of 13,600. Besides, there are 28 specialized secondary schools attended by 13,600 students and dozens of vocational, factory-training and farm mechanization schools.

★ ★ ★

The Kirghiz Academy of Sciences, established in 1954 (before that time it existed as the Kirghiz Branch of the USSR Academy of Sciences), has 1,700 research workers on the staffs of its institutes and laboratories. Forty-one of these hold a Doctor's Degree and 484 the degree of Master of Science.

★ ★ ★

All medical aid in Kirghizia, as everywhere in the Soviet Union, is free. Clinics, hospitals and maternity homes operate in all rural districts. The republic has almost 2,500 physicians, while before the Revolution there were only 15, none of whom were Kirghizian.



EACH COLLECTIVE FARM HAS A HERD OF SHEEP.



INSPECTING COTTON BEFORE PICKING BY MACHINE.



FRESHMEN OF A MEDICAL SCHOOL IN LAB CLASS.



FRUNZE—CAPITAL CITY OF THE KIRGHIZ REPUBLIC.



HARVESTING SUGAR BEET. ALTHOUGH NEW FOR KIRGHIZIA, IT HAS FAST BECOME ONE OF THE MAIN CROPS.

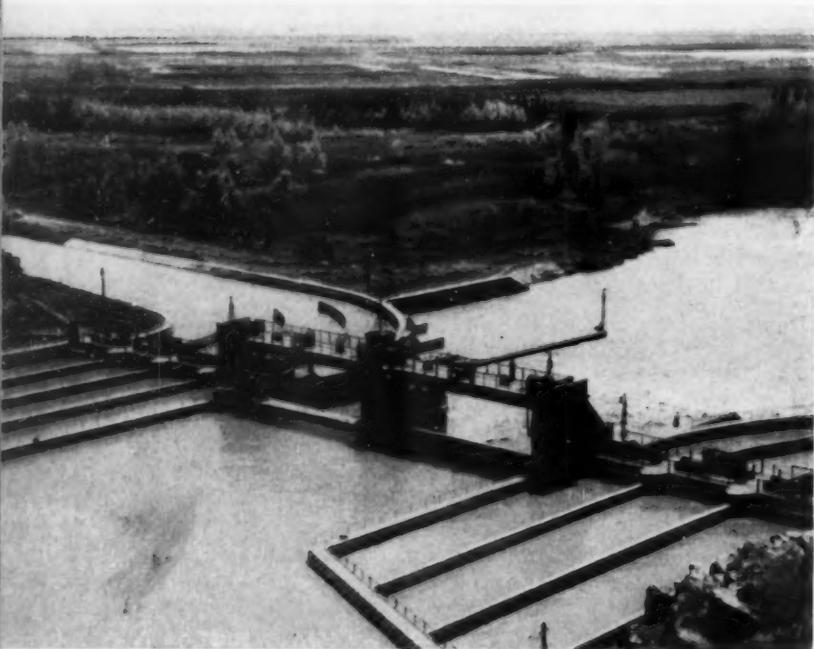


VILLAGES REPLACE OLD NOMAD ENCAMPMENTS.

KIRGHIZIA— A LAND AWAKENED

Continued

CHUMYSH DAM—HUB OF A VAST IRRIGATION SYSTEM COMPLETED AFTER THE WAR.



NEW HYDROPROJECTS WILL BRING WATER TO MORE COLLECTIVE FARM FIELDS.



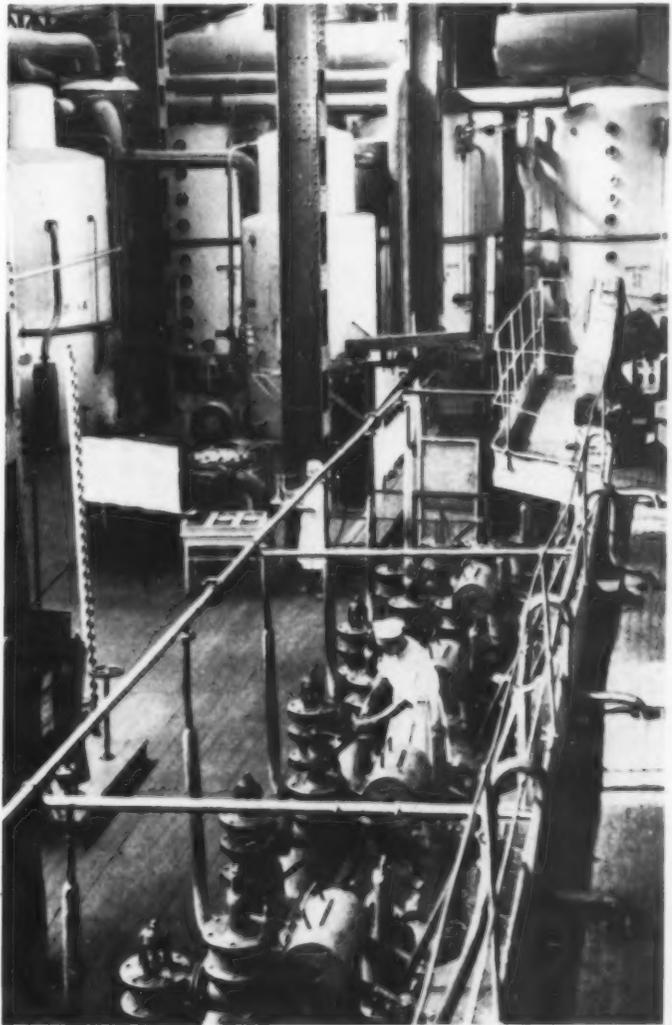


INCREASED FODDER PRODUCTION ALONG WITH RICH NATURAL PASTURES CONTRIBUTE TO THE GROWTH OF HERDS OF MEAT AND DAIRY CATTLE.

KIRGHIZIA HAS THE REPUTATION OF BEING THE BREADBASKET OF CENTRAL ASIA.



REFINERIES LIKE THIS HAVE MADE KIRGHIZIA A LEADING SUGAR PRODUCER.



THE TEXTILE INDUSTRY HAS BEEN EXPANDING AS COTTON PRODUCTION INCREASES.



Continued on next page



THE MODERN HOME OF A KIRGHIZ FARMER TODAY CONTAINS NO TRACE OF ANYTHING REMINISCENT OF THE NOMAD TENT OF THE PAST.

KIRGHIZIA— A LAND AWAKENED

Continued

THERE'S NOTHING BETTER THAN A CUP OF GREEN TEA AND GOOD KIRGHIZ BREAD.



THESE GIRLS ARE STUDENTS AT THE HIGH SCHOOL IN THE CITY OF PRZHEVALSK.

MANY TALENTED CHILDREN ATTEND THE STATE MUSIC SCHOOL OF KIRGHIZIA.





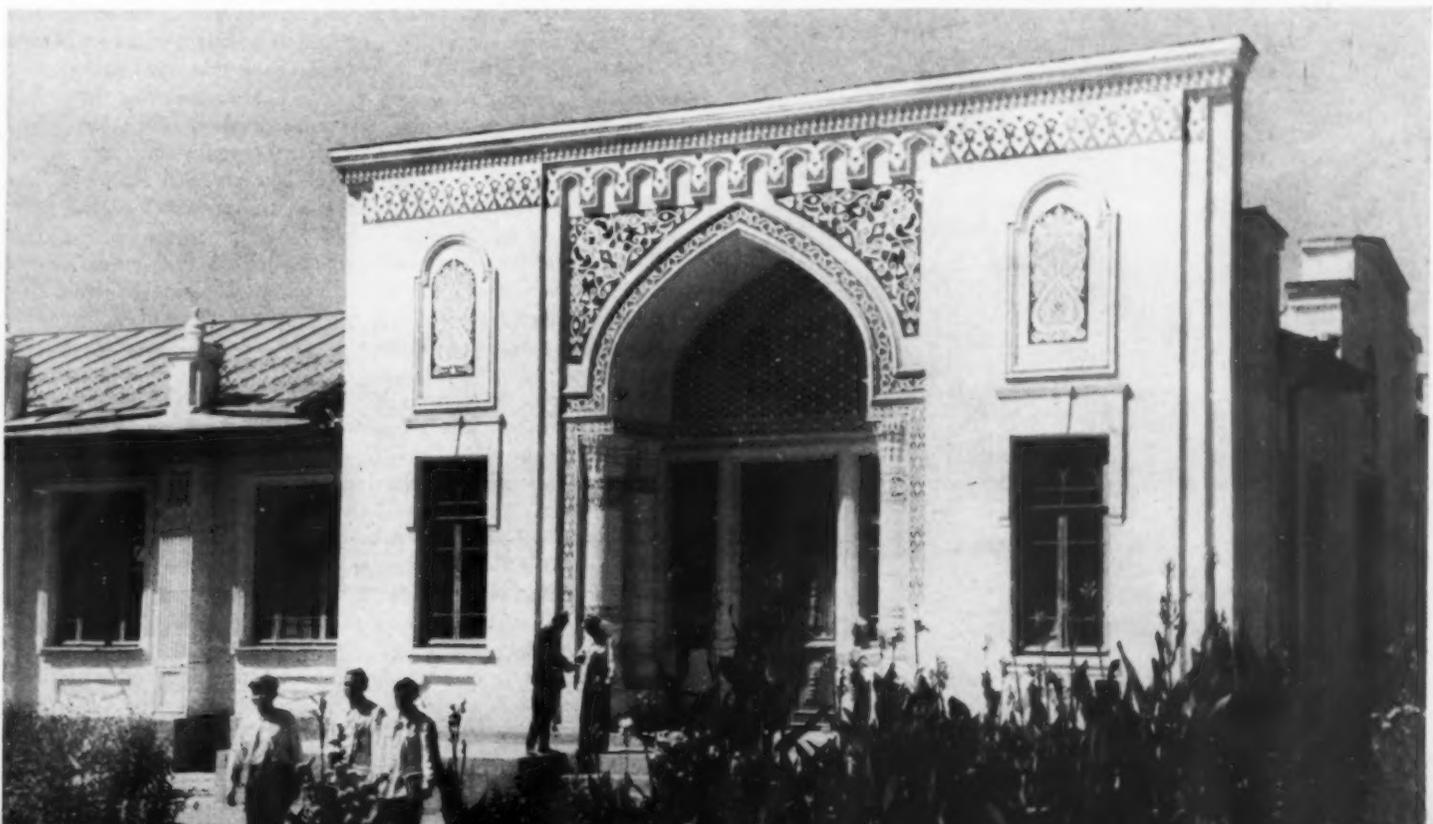
CLASS OF GRADUATE GEOLOGY STUDENTS AT THE KIRGHIZ ACADEMY OF SCIENCES.

ONE OF THE BUILDINGS OF THE STATE UNIVERSITY OF KIRGHIZIA IN FRUNZE.



FORMER HERDSMAN ISA AKHUNBAYEV IS NOW ACADEMY OF SCIENCES PRESIDENT.

THE KZYL SHARK COLLECTIVE FARM'S NEW COMMUNITY CENTER. AN EXTENSIVE CONSTRUCTION PROGRAM IS IN PROGRESS EVEN IN THE MOST REMOTE MOUNTAIN DISTRICTS.



1958

KIRGHIZIA—

A LAND AWAKENED

Continued from page 26

was practically universal. In the whole of the nation there were only four people with a higher education—three religious teachers and a veterinary.

But the Kirghizians are an innately gifted people. Our folklore, though oral until the recent past, is rich. Handed down from generation to generation, the songs, fables, legends and epic tales like *Manas* depicted the spirit of the Kirghizians, their dreams and aspirations for a better, happier life. It remained a visionary dream until the Soviet period.

Stride Across the Centuries

It is a long stride from the Kirghizia of my youth. In forty years we have stepped across the centuries and changed the character of our nation. The Socialist Revolution was a break with ignorance and oppression, a break that made it possible for the Kirghizians to join the mainstream of modern civilization.

The people themselves became the masters of their country and their destiny. Now we have our own parliament and government in our own capital city of Frunze. Kirghizia, with its population of almost two million, is an equal member of the family of fifteen republics which make up the Soviet Union.

The former nomads have long since settled down. This involved a drastic change in age-old customs, in every aspect of the life of 100,000 families. It was not only a matter of building modern houses to replace the felt tents. Whole villages had to be planned, with schools, hospitals and other conveniences, taken for granted in developed areas but quite unknown in primitive nomad communities.

It was not at all easy to transform as backward a country as old Kirghizia—land of untouched natural resources, land without industry, land where the only source of living was primitive stockbreeding. But we were helped every step along the hard road of building a new life by the more advanced peoples of the Soviet Union.

Geological prospecting, creation of industries, power and irrigation projects, road construction, cultural development—all this was financed from the national budget. Specialists in various fields arrived from other Soviet Republics who helped to give Kirghizia a good start and initiated training of our own people for modern farming, industry and culture.

Farming

Stockbreeding is still one of the main occupations in Kirghizia, and great herds of fat, fine-fleeced sheep and thoroughbred horses are much in evidence in the alpine pastures. But no longer does the whole community travel from pasture to pasture. In addition to the traditional stockbreeding, Kirghiz collective farms have developed many other branches of agriculture.

Of particular importance is fodder production, which has helped relieve the stockbreeders of the necessity of traveling in search of new pastures. The area under fodder crops has increased sevenfold since the Revolution and now comprises almost one quarter of the entire sown area of our republic.

The valleys of Kirghizia's mountains have fertile soil, but the cultivation of land is inconceivable without irrigation. Back in the old days water was measured out almost by the spoonful. Now life-giving water is supplied to collective farm fields from hundreds of canals built with money allocated from the national budget.

Within the past thirty years the area of irrigated land in the republic has been quadrupled. The irrigated area will be further expanded by the Grand Chu Canal and the Orto-Tokoi Reservoir, now under construction.

These past decades saw the introduction of many crops new for Kirghizia. Sugar beet is one of them. Its importance for the national economy will be better understood by knowing the fact that all of the country's sugar is obtained from sugar beet. Now it is one of our main crops. Kirghizia has become the leading grain producer of Central Asia. The fertile lands of the Ferghana and Chu valleys also grow cotton and bast crops, and large areas are under fruit orchards.

As the Kirghizian countryside blossomed, the village changed. The



COTTON GROWER ALYA ANAROV IS A KIRGHIZ DEPUTY IN THE SOVIET PARLIAMENT.

KIRGHIZIANS ARE JUSTLY PROUD OF THEIR SKILL AT BREEDING FINE HORSES.



electric cables that stretch high over the mountain village of Darkhany on the southern shore of Issyk-Kul symbolize the leap across the centuries that the Kirghiz villages have made. The total capacity of rural electric stations has increased tenfold during the past fifteen years.

Industry

Industry in Kirghizia is entirely a product of Soviet enterprise. The fifty-five primitive handicraft shops of the pre-revolutionary period hardly deserved the title. Kirghizia now has 500 industrial establishments.

Our capital city of Frunze has grown into one of the largest industrial centers of Central Asia. Compare its present production of machine tools, farm implements, oil, coal, textiles, shoes and canned goods with this statement from a pre-revolutionary survey. The city, then named Pishpek, cites the survey, "manufactures cheese and has two leather factories and a creamery"—an illuminating commentary on the changes these four decades have brought.

Our mountain country abounds in metals and minerals. In water power resources Kirghizia is richer than the whole of western Europe. Rich natural resources have provided a sound foundation for a variety of industries.

Kirghizia's power stations produce enough electricity not only for local industry but also for neighboring republics, and our water power resources have by no means been exhausted. Our metal-working plants are now able to manufacture equipment for agriculture.

While formerly practically all the cotton was shipped out of Kirghizia for processing, now we have our own ginning plants and textile mills. Sugar beet, tobacco and hides are also processed locally, and meat is canned in Kirghiz factories. However, the capacity of our processing plants, although growing rapidly, is still insufficient to handle all of our agricultural products, and the surplus is shipped to neighboring republics.

The main economic areas of Kirghizia are the Chu Valley in the north and the Ferghana Valley in the southwest. Most of the republic's industry has developed here, and it is here that most of the population lives. But these two valleys are separated by mountains. To make them accessible to each other is a major task. Many of the towns have already been connected by highways or railroads, but there is still a big job ahead.

New People

The men and women to run and operate our big industrial and agricultural enterprises have been trained and educated over the years with the help of specialists and teachers from the other Soviet Republics.

Kirghiz engineers, technicians, agronomists and skilled workers in a hundred crafts are the sons and daughters of nomad shepherders. This is now a country of schools and libraries. In Frunze alone there are six colleges and one university, ten specialized secondary schools and a host of general schools.

Illiteracy has long been abolished. The standard to which young people reach now is not merely reading and writing but a college education. On a recent visit to my native village I learned that fifty of the young people in this small community were college students.

We writers, too, had to leap the centuries. We had a rich folklore to draw upon but no written language of our own. In 1924 the Kirghiz alphabet was created, and by 1930 the works of our poets, playwrights and novelists began to be published in the native language. Now they are not only read by the Kirghizian public but are published in translation in the Soviet Union and abroad.

Along with a national literature has come a national art, music and theater. The long dormant talent of Kirghizia is now manifest in its painters, composers, actors, scientists. Frunze has both a Kirghiz and a Russian theater, producing the best of the current and classical plays. The republic's Academy of Sciences is staffed by Kirghizians who are making contributions in a wide area of scientific and cultural fields.

I live in Frunze, the heart of Kirghizia. It is a city flooded with sunlight, bright with cloudless blue skies the year round, colorful with flowers and tree-lined streets. It bustles with industry and building, with engineers and workers in every craft and occupation under the sun, with talk of science and art and music. It is a modern city, perhaps much like a modern city anywhere else in the world to the casual visitor, but to me it is a concentrated picture of my people, awakened to a new life. ■



BUBUSARA BEISHENALIYEVA PERFORMS A GRACEFUL KIRGHIZIAN NATIONAL DANCE.

YOUNGSTERS OF CHALPON-ATA CAMP ON LAKE ISSYK-KUL TAKE A MOTORBOAT TRIP.





Where The Lotus Blooms

THE ASTRAKHAN STATE
PRESERVE







TATYANA BLUMENTHAL AND VADIM KOMAROV, YOUNG ORNITHOLOGISTS IN THE FIFTH YEAR AT LENINGRAD UNIVERSITY, SEEK PHOTOGRAPHS OF RARE BIRD SPECIES.

By Vladimir Krasnov

THE MAP on the opposite page shows that as the Volga River approaches the Caspian Sea it breaks up into many streams and runnels. South of the city of Astrakhan their number greatly increases and they intertwine in a vast network forming the Volga delta, long famed for its varied flora and fauna.

Our cutter has been sailing through that watery labyrinth for more than two hours now. The sun is scorching—not a cloud in the unbelievably blue sky. On the mirror surface of the water, rippling circles appear and then vanish again—fish playing beneath the surface.

The shores are a thick jungle of purple willows and reed, alive with bird noises. Gray herons slowly take wing and stare down from the trees at the human intruders. A covey of wild ducks fly overhead, almost asking for a gun. But this is "No Hunting" country—the deadliest weapon permitted here is a camera.

The cutter sails around another tiny island and there on the bank is the sign we are headed for, "The Astrakhan State Preserve."

Not far from the river's edge is a simple black marble gravestone, under which lie the two men—agronomist Nikolai Podyapolsky and forester Vladimir Khlebnikov—founders of the preserve who devoted their lives to a study of natural life in the delta.

Continued on next page

Students like these, on vacation excursions, often lend a hand with the work of the preserve in banding birds. This is of considerable help in studying the life of birds and their migratory habits.





Youngsters on a sailing adventure through the Volga delta are given the rare treat of lotus honey by the naturalist Konstantin Gorbunov.



Tame and docile because of their knowledge of the preserve's protection, these pelicans along the Volga delta pose quietly in front of the camera.

Campers flock to the preserve for their favorite sport in reservoirs containing 60 different kinds of fish. The menu for today, posted on the tent, includes fish soup, oatmeal with butter, and hot tea.



Where the Lotus Blooms

Continued

"International Bird Hotel"

In 1919, when the young Soviet Republic was only in its second year, Nikolai Podyapolsky went to Moscow to talk to Vladimir Lenin about preserving the natural riches of the delta country. Almost immediately afterward the Astrakhan State Preserve was officially created, the first of many to follow.

The preserve has come to be called "International Bird Hotel." In the spring, cranes and wild geese on their way north from Africa and Mesopotamia stop to rest among the reed and cattail and on the quiet reservoirs. Their hubbub can be heard for miles through the woods until they take wing again in great flocks. In a few days they are seen in Central Russia, the Urals, Siberia. In the fall, on their way south, they stop over again at their Volga "hotel."

One of the unanswered questions which naturalists working at the preserve ask is why some birds migrate northward, while others



Among the numerous other varieties of birds that find a haven here are cranes, wild geese, swans and pheasants.



Pelicans selected for special study are led to a cage in the park. A large group of resident scientists conduct research on the flora and fauna of the 100,000-acre preserve.

remain to winter in the Volga delta. But that is only one of many puzzling questions these scientists are patiently trying to answer.

Among the 260 types of birds in the preserve, some 60 types—the pelicans, swans, gray geese, duck and pheasant, among others—nest there. Naturalists have noted with interest that the noddy, a type of tern, the large and small white heron, and the night heron form whole colonies on the preserve. They nest, to use the naturalist's terminology, in "purebred" colonies. Unlike other birds which mix, they organize their own separate nesting groups.

In the reservoirs of the preserve are to be found 60 of the 68 types of fish native to the Volga-Caspian basin. On their way from the Caspian to the Volga and back during the spawning season, sturgeon, beluga, sevryuga, herring and roach pass through the preserve waters. Here, too, are carp, bream, perch, sheatfish and pike. The carp and sheatfish winter in great natural hollows at the water's bottom.

Among the animals that live in the preserve forests are boar, badger, fox, sea otter, wildcat and ermine.

The flora is most diverse and includes some 300 different species. Pondweed, bur reeds, water chestnut, white water lily, willow and elm grow in profusion. One of the most beautiful sights of the preserve is the lotus that grows on the ponds. Local people call it the Caspian rose.

The Lotus

The Volga delta is the only place in Europe where this lovely water plant grows. It is one of few flowers which has resisted domestic cultivation.

Water poured on the lotus leaf rolls the way mercury does, repelled by the waxy substance with which the leaf is covered. The petals of the lotus flower open at sunrise and close at nightfall.

The flower, which resembles a large rose, blooms for three days and changes in color from an almost purple with violet touches, to a pale cream. After the petals fall, the lotus fruit enclosed in its case ripens and the plant bends with the weight until the fruit drops into the water.

Legends that have grown up around the lotus are many and varied. It is the flower which brought forgetfulness to Odysseus and his companions in Homer's great poem. It was the floral emblem of ancient Egypt, and the source for an old and lovely Indian story of tragic young love.

A Great Natural Laboratory

The preserve takes in an area of more than 100,000 acres. Its flora and fauna are studied by a large group of resident scientists—ichthyologists, botanists and ornithologists. They have acclimatized muskrat and beaver to the delta and are working to acclimatize two types of fish whose natural habitat is the Far Eastern

waters. They are also experimenting with methods of artificial breeding of valuable fish species, and working out ways of protecting fish against parasites and rapacious water dwellers, and of assuring abundant food supply.

One of the scientists, Konstantin Gorbunov, has designed a machine that fertilizes the fishing grounds, to increase the numbers of fish in the reservoirs. He has also successfully raised bees in the delta, and the nearby collective farms have made progress in developing this profitable area of husbandry.

Preserve scientists continue their outdoor study the year round, in all seasons and weather. Some years ago they became interested in the behavior of fish in the winter months, when vitality and functional activity are at their lowest. As soon as the river was clear of ice, one of the scientists, Idelson, descended into the submarine depressions in a diver's suit to a depth of almost 65 feet. There, at the bottom of the hollow he found carp and sheatfish lying packed close together. As Idelson describes it in his book, it was a simple matter to pick the fish up and hold them in his hand until they began to stir, as though awakened, and then sluggishly swim away.

The preserve is a great natural laboratory for undergraduate and graduate students of biology and for research scientists. For the tourists, excursionists and the many foreign visitors, it is a wonderland of natural beauty, particularly when the lotus is in bloom. ■

URALMASH ENGINEERS

AT WORK

By Yuri Graftsky

Photos by Alexander Mokletsov

THE Urals Heavy Machinery Plant, or Uralmash as this giant is more familiarly known, is a veritable town built in the early thirties amidst dense woods. Now this is not only a huge industrial complex but also a modern residential area forming an outlying district of the city of Sverdlovsk.

For a quarter of a century Uralmash has been turning out all kinds of big machines. Its trade mark, stamped on presses, excavators,

Entrance to Uralmash, one of the country's leading producers of heavy machines. The tank shown,



Engineer Sergei Shestopalov has worked at Uralmash for 25 years. He helped create the design for the first Soviet excavators and is now supervising production of the latest models.



bridge cranes, ore crushers, rolling and blooming mills, blast furnace equipment, slag cars, cement furnaces, is a familiar one in thousands of mills, mines and factories in the Soviet Union and abroad.

During World War II, Uralmash received both men and machines evacuated from the western part of the country and became a major supplier of military equipment. Mounted at the main entrance to the plant is the last tank it produced but never shipped. It stands as a symbol of the hope that never again will machines of this kind pass through the gates.

When the war ended Uralmash converted to civilian production and fast regained its old reputation of a "plant producing plants."

But Uralmash has been turning out another product as indelibly marked with its seal of excellence—inventive engineers.

Shop Experience

Sergei Shestopalov and Nikolai Maximov came to the plant in 1934, soon after the first shops were opened. They were village boys with no more than seven-year schooling. At the plant they were apprenticed as fitters.

Both boys moved ahead to become mechanics, but Sergei had bigger ideas. He planned his day so that he would have at least three hours of study time every evening after a full eight hours in the shop. It was no easy regimen, by any means, but he successfully completed his secondary school course and followed with the engineering course in the evening division of the Urals Polytechnic Institute, which had been set up at the plant.

After graduation he was promoted from the shop to the designing department. He worked

at a drafting board for some time, but it was not what he wanted—this work on paper. He had ideas for new and better design, but he had to handle the metal and machine parts themselves to get the feel of what he wanted to do with them.

He asked to be transferred back to the excavator parts shop, where his friend Nikolai Maximov was still working. Once back in the shop he felt at home again. But now he looked at the machines through the eyes of an engineer-mechanic. His first project was a rearrangement of the assembly line where he had worked, to economize on movements and cut down production time.

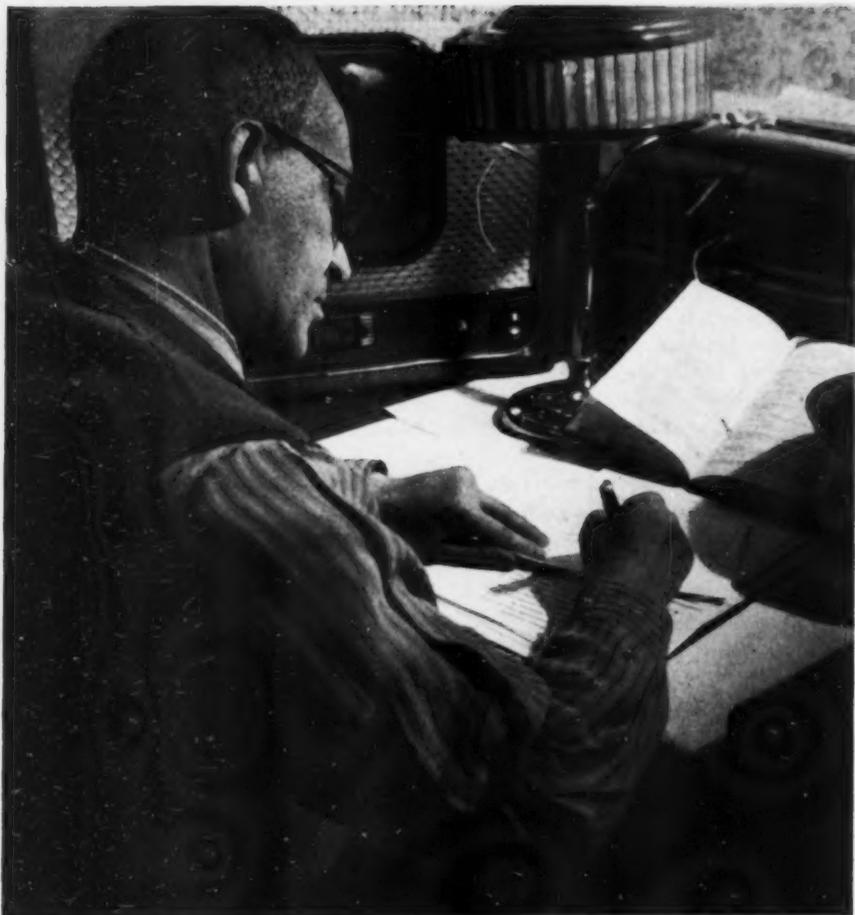
Shestopalov worked with Maximov and other men with whom he had begun his career at the plant, fitter Georgi Kalinin and crane-

Continued on next page

the last produced during the war, is fastened to a pig iron slab, symbolizing the hope that military equipment will never again be needed.



Nikolai Maximov (right), a veteran worker-inventor of the plant, has come to Engineer Veniamin Raskin for advice on one of his new suggestions.



Engineer Khaim Vinokursky is writing a book based on his years of experience in handling steel construction in the heavy machine-building field. He is a Master of Technical Science.

Designer Boris Satovsky (right) takes his drawings for a self-propelled excavator into the shop. By listening to the advice of workers, the engineers avoid many operational "bugs."



ENGINEERS AT WORK

Continued

operator Pyotr Prokin. With their help engineer Shestopalov has worked out some 3,000 modernizing innovations in excavator manufacture. They have cut production costs of the machine by half. The inventors received bonuses and awards for their accomplishments.

Learning a New Specialty

Khaim Vinokursky is another Uralmash engineer. He originally came to help build the plant after graduating from a construction institute in his native Ukraine. Once the plant was built, there was no call for his construction specialty. He was offered his choice of jobs elsewhere, but Vinokursky preferred to remain in the Urals, even at the cost of learning a new specialty.

He began to work on the design of bridge cranes. It was a field which he soon mastered and in which he began to do original research. At his service were the plant research laboratories and technical library. Available also for consultation was the Urals branch of the USSR Academy of Sciences.

His studies were interrupted by the war when the plant turned to production of tanks and self-propelled guns. After the war, Vinokursky resumed his studies. For his dissertation on bridge cranes, he was awarded the degree of Master of Technical Science.

Engineer Vinokursky's peculiar combination of experience in building engineering and crane engineering has proved invaluable to the plant. When a giant walking excavator was designed for building projects, Vinokursky spotted defects at once.

The big machines had so many superfluous trusses that the boom, which is really the most critical single element since it carries the bucket, was practically lost to view. Vinokursky suggested that the boom be made to answer its purpose by replacing the heavy trusses with light bracing, as in a ship's mast. The guy boom, now used on walking excavators, simple in design and yet strong enough to withstand very great stresses, is the result.

Vinokursky, out of his wide-ranging study of metal design, has written an authoritative book on steel structure in machine building.

His son, Arkadi, and his daughter, Raissa, both follow in their father's footsteps. Arkadi works in the designing office of the plant and Raissa is a freshman at the Urals Polytechnic Institute. Engineering is, of course, the most frequent topic of family conversation. For relaxation, Vinokursky turns to the Yiddish of his favorite writer, Isaac Peretz, who recalls for him some of the sights and sounds of Jewish life in the past.

Engineering Family

The Satovskys are another Uralmash engineering family. Boris, 50 years old, does excavator design. His wife, Lyudmila, designs presses and rolling mills.

Boris was slated to become a land reclamation engineer; his father was an agronomist. But during his field work on an irrigation

canal, when he was still at college, Boris became interested in excavating machinery, shifted his specialty, and ever since has been completely absorbed in design improvement of these big diggers. He supervised the design of one of the first mammoth drag-lines.

The Satovskys have two daughters, Tatyana and Natasha. They are still too young to have decided on their futures, but if they follow precedent, as is likely, there will be four designers in the Satovsky family in a few years.

Job Promotion

Boris Satovsky has something of a gift for creating engineers. He is responsible for the careers of Vladimir Rudoiskatel and Veniamin Raskin. They are both young men, recently turned thirty. They both came to Uralmash as workers, Rudoiskatel as a lathe operator and Raskin as a fitter.

When they graduated from secondary school—they went to the night school at the plant—Satovsky called them both in. "How would you like," he asked, "to work in the designing office?"

They would like nothing better, they told him, and Satovsky took them under his wing. The designs the two men did were interesting, bold, but necessarily lacked the engineering knowledge to make them functional.

The two embryo designers took the correspondence course given by the plant's division of the Urals Polytechnic Institute. Among the 700 engineers who have graduated from the correspondence course are the plant's chief engineer, Dmitri Berenov, and chief designers Georgi Khimich and Vladimir Kubachek.

It was soon after Vladimir Rudoiskatel and Veniamin Raskin completed the course to become qualified engineers that Boris Kovalenko, a well-known excavator operator, came to Uralmash from Kuibyshev on the Volga River where he had been working on the construction of the big hydroelectric station.

Kovalenko had come to Uralmash with a design that promised to increase the capacity of a bucket originally designed by Satovsky so that it would fill a 5-ton dump truck in one load.

Beginning of Important Careers

It must have been something of a blow for Satovsky to have his design replaced, but he looked over Kovalenko's drawings, shook Kovalenko's hand in congratulation, and set to work. The job of working out Kovalenko's improved excavator he entrusted to his most promising assistants—Rudoiskatel and Raskin.

For both young engineers it was the beginning of important careers. As the work progressed, Rudoiskatel's marked abilities won him the title—only half jocular—of "Capablanca of the Excavators." Like the famous chess master, he was superb in evaluation of all possible versions. The speed of his reaction to problems as they cropped up and the precision of his solutions made it evident that here was a master among engineers, a product of excellent theoretical training based on a thorough practical grounding of experience as a shop worker.

Continued on next page



Salient feature of Soviet engineering is collective effort. Around the drawing board are promising young men and veteran engineers of Uralmash exchanging their ideas on details of a new machine.



Vladimir Rudoiskatel is the kind of engineer who often becomes so engrossed in an idea that he loses track of both time and cigarettes when he is working to get a design finished.



Like many workers, draftsman Vladimir Kabashkin attends classes at the institute in the evening.

Graduates of engineering colleges combine their theoretical knowledge with the experience of old hands. Young shop engineer Nikolai Podgorny (left) consults some of the veteran fitters of Uralmash.



ENGINEERS AT WORK

Continued

Since then Rudoiskatel has been right-hand man to Satovsky. The young engineer worked on the major units for the first walking excavator and on preparatory work for mass production of a dragline.

Kovalenko's visit was equally important for Veniamin Raskin's career. It was a casual remark of Kovalenko's that got Raskin started on his big project.

One day, toward the end of his visit, Kovalenko said in the course of conversation, "Somebody ought to get busy designing a universal machine—one which could serve as both crane and excavator."

The idea set Raskin thinking. At the time he was working with some other designers on a 10-cubic-yard cliff excavator and was designing units for powerful draglines. This was in the office. When he went home, he roughed out ideas for the kind of machine Kovalenko had suggested.

Today the machine is in the making, with Veniamin Raskin leading a group of engineers who are working out the design details of a universal excavator. It will be a powerful



It's not all work and study, however, as Engineer Valentin Barannikov demonstrates. He has a passion for music, and after a day spent working

in the designing room, he frequently can be found playing the piano for an amateur orchestra. Others take part in choral groups or sports activities.

double caterpillar-tread machine with a 6½-cubic-yard bucket, a crane which will have a loading capacity of 75 to 100 tons and a drag-line with a 5-cubic-yard bucket and a 130-foot boom.

Combining Work and Study

The Urals plant seeks out promising young engineers at the country's technical colleges. Engineer Nikolai Podgorny came from the Leningrad Polytechnic Institute; he was one of its high-ranking students. Yuri Kryuchkov is a graduate of the Gorky Polytechnic Institute and Valentin Barannikov a graduate of the Rostov Industrial Institute. They have settled in Sverdlovsk, married, and begun to raise families.

But the country's need for engineers is greater than the number of engineering graduates available; it has been that way for many years, so that Uralmash itself trains engineers right at the plant.

Young Vladimir Kabashkin will be a graduate engineer in a very few years. He came to

the plant after graduating from one of the Sverdlovsk specialized secondary schools. At first he worked on assembly of large units for presses, cranes, and walking excavators. Then he was promoted to the design office. Last year he entered the freshman class at the Urals Polytechnic Institute. He will be studying while he holds down his job.

Vladimir is one of many young people who are combining work and study—with time left over for recreation. Galina Kulakova works in the spare parts division and is in her fourth year at the Institute. By avocation she is Sverdlovsk's ping-pong champion.

Alexandra Afanasyeva works in the design office, studies evenings, and sings with the amateur chorus at the plant's Palace of Culture. Engineer Valentin Barannikov is a jazz fancier and plays with one of the Uralmash bands.

This is Uralmash and a few of its inventive engineers. They have carved out a full life of work, study, and play for themselves. In process they have built both a present and a future for themselves and for the country. ■

It's curtain time at the plant club for Lyudmila Satovskaya, member of the dramatic group.



Aboard A Suburban Train



CONDUCTOR'S CRY OF "ALL ABOARD" FINDS TARDY TRAVELERS RACING TO BEAT THE CLOCK.



SOME ICE CREAM FOR THE ROAD.

HUNDREDS of suburban trains pull out of Moscow's numerous stations every day, making frequent stops on their runs. They are filled with city dwellers bent on escaping the heat during the summer months and are especially crowded on week-ends, when the man of the house, who may not be able to make it out to the country every day, is sure to join his family.

Moscow, like other large metropolitan centers, is surrounded by suburban towns and communities. During the summer a good half of the capital's adult population and a majority of its youngsters move to the shade of pine forests and birch groves, to green meadows and the banks of wooded streams.

Continued on page 46



SOME COMPLEX PROBLEM WORRIES HIM EVEN ON THE TRAIN.



THE FAMILY PET IS IMMUNE TO COMPLIMENTS.



MAMMA TAKES A NEEDED NAP, WHILE PAPA MINDS THE BABY.



READING CURRENT NEWS WHILE EN ROUTE.

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Aboard A Suburban Train

Continued

There are many vacation resorts and children's summer camps in Moscow's belt of picturesque suburbs. But outnumbering these by far are the ordinary dachas, or summer cottages, belonging to factory and office workers who commute daily to and from their city jobs. Surrounded by cultivated plots of gardens and flower beds, berry bushes and fruit trees, they offer a pleasant haven after the sultry heat of the city.

So, after a day's work, thousands of commuters leave their cares and troubles behind as their suburban train departs and the wheels start their rhythmic tune. ■



SOME PEOPLE WISH HE HAD BROUGHT HIS KNITTING, BUT THIS COMMUTER THINKS IT'S A GOOD TIME TO PRACTICE.



"Good-bye, Mom! See you soon! Don't miss us too much!" children were calling out as the train started off on a fine June morning. This is a typical scene when school ends and youngsters all over the country begin their summer fun with a train ride that will take them to one of the numerous children's camps.

FROM PIGEONS TO PORCUPINES—THE PETS FOLLOW THEIR OWNERS.

AN AMUSING BOOK OR A BIT OF NEEDLEWORK HELPS TO MAKE THE TIME PASS MUCH FASTER.



Little Lena Varvarova passed an entrance test at the age of seven. She is the pupil of Anaida Sumbatyan.

THE Soviet Union has 1,000 seven-year music schools, 19 eleven-year music schools, 120 specialized secondary music schools, 22 music conservatories and 300 evening music schools for adults.

The curriculum of the seven-year schools includes instruction in a musical instrument and music appreciation in addition to the subjects taught in general schools. By the time a pupil has completed the course, his teachers are able to determine whether or not he has a special gift for music. If he has, he will be accepted for the four-year course in a specialized secondary music school. There he will be trained as a competent musician. If he continues to show promise, he may qualify for advanced training at a conservatory.

All this, I would say, is routine training for thousands of boys and girls who choose music as their profession. But then there are children who show a real aptitude for music in early childhood. Not only their parents but even impartial specialists usually say of them: "This child shows talent." It is for this group that the country has eleven-year music schools at conservatories, and our school is one of these.

Continued on next page



Music School for Talented Children



By Mikhail Anastasiev,
Director, Central Music School
of the Moscow Conservatory

Tots of 5 or 6 are taught to think pictorially while singing about the owl perched in a tree.

Music School for Talented Children

Continued

How Are They Chosen?

The Central Music School of the Moscow Conservatory was founded 25 years ago. It is the preparatory school for entrance to the conservatory, and we are proud that it has graduated such virtuosos as Leonid Kogan, Mstislav Rostropovich, Igor Bezrodny, Tatiana Nikolayeva, Yevgeni Malinin and Vladimir Ashkenazi.

Our school has 300 children in its piano, string, wind, choral and conducting departments. Each year we choose some 20 to 25 children for our preparatory training group from several hundred five- and six-year-old applicants.

How are they chosen? With our many years of experience with talented children it is not too difficult for us to decide whether a child has native musical ability. We can judge his ear for music, his musical memory and his sense of rhythm by listening to him sing a simple song or play a short musical phrase or clap out rhythmic patterns.

These judgments are, of course, tentative, and can be confirmed only by working with the child over a period of time. This is precisely the function of our preparatory training group.

For a period of a year to a year and a half before they begin the first grade of actual school work, the children are given individual instruction by our preparatory group teachers. Thus the children are thoroughly tested before they begin their professional schooling. The course of study, school organization—the entire process of training—is professionally oriented.

The Course of Study

The music program includes classes in sight reading, solfeggio, theory of music, harmony, the literature of music and such group subjects as chorus, rhythmic, ensemble and orchestra. It is organized so as to help develop a wider musical background and increasing



Development of a rhythmic sense and plasticity is emphasized among pupils in the lower grades.

professional skill with each year of study.

The number of hours a child spends on his studies, both in school and at home, are increased with each higher grade. To cite an example, in the lower grades, five to six hours a week of class time will be devoted to the mu-

KOLYA MITROFANOV, A TALENTED CELLIST AND ONE OF THE SCHOOL'S TEN BEST STUDENTS, IS PREPARING FOR A CONCERT TOUR IN RIGA WITH THE HELP OF HIS TEACHER.





Symphony orchestra study helps develop the pupils' professional skill utilized in school performances.



Vladimir Ashkenazi, graduate, introduces his sister to a favorite teacher.

music group—musical literacy, rhythmic, music specialty and chorus.

In the senior grades of the orchestra division, the number of class hours increases to 10 or 11 weekly for the music group. It includes piano, which all students in the or-

chestra division must take, music specialty, ensemble, orchestra, solfeggio, harmony and music literature.

Homework exercises for the music courses will take from one to four hours a day, depending upon the grade.

ALTHOUGH ONLY FIVE YEARS OLD, IGOR FOMCHENKO ALREADY SHOWS A REAL APTITUDE FOR MUSIC.



STUDENTS HELP EACH OTHER PREPARE FOR CONCERTS.

The Teachers

The teacher is, of course, the crucial factor in any school; particularly is this so in training gifted musicians. What is required is a rare combination of understanding, experience, talent and skill.

Our teaching staff includes such Moscow Conservatory professors as Alexander Goldenweiser, Genrich Neugaus, David Oistrakh, Lev Oborin and Galina Kozulupova, who teach the senior grades, and a group of specialists in music education for children. Among them are Anaida Sumbatyan, Alexander Yegorov, Semyon Bezrodny, Tatiana Kestner, Yelena Khoven, Tamara Bobovich and Stefan Kalyanov.

All our teachers are familiar with every phase of work with gifted children, from the very first steps to the selection of suitably varied and complex concert programs for public performance.

An important and exciting part of school life is performance both at closed academic evenings before a teachers' committee and at public concerts. From their very earliest years the children are accustomed to performing in a brightly lit concert hall. Stressed is an artist's responsibility to his expectant audience, a most important element in professional training.

Public performances are varied and include examination concerts presented in Moscow's

Continued on next page

Music School for Talented Children

Continued

large concert halls, radio and television broadcasts, concerts at factories and schools, and, for outstanding students, performance as soloists with the Moscow Philharmonic Orchestra, under the baton of the best conductors.

An All-Round Education

Our students are not *wunderkinder* who are deprived of childhood fun and know nothing except their instruments. We train them to become happy, well-rounded, well-educated adults. All our children get a complete general education, and upon graduating are awarded a secondary school diploma which enables them to enroll in any college in the country.

Our experience refutes the old notion that gifted musicians are one-track people. Of the 245 students we have graduated during the past five years, 76 were awarded gold and silver medals for outstanding scholarship in general educational subjects. We have a number of youngsters who show promise as artists and others as actors, who demonstrate their aptitude in the school productions given by our dramatic club.

Our children are required to complete the same course of study as the general secondary schools. The simultaneous study of the two cycles—general education and music—is something of a strain. To give the children time for sports, for theater and concerts and just simply for relaxation, our school course is 11 years, as opposed to the 10 years of the general school.

We pay particular attention to the less tangible but equally important problems of character building. There is no place in our school for envy, conceit or the ill feeling which misdirected rivalry produces, nor for individualism at the expense of fellow students or the school. We develop the feeling for cooperative work and fun through school and class events, sports and excursions.

Free Training

There are no tuition fees in our school. Education in the Soviet Union, and that includes musical education, is provided without charge to everyone. Our students in the senior grades who do satisfactory work receive a monthly stipend, as do conservatory students.

The schooling of each one of our children costs 5,000 rubles a year and is financed from the national budget. Instruments are provided by the school. A few of the most gifted students are given permission to use the rare and precious old violins and cellos in the national collection.

Our school is very proud of the number of musicians of talent, including the 70 prize-winners in international and Soviet music festivals, that it has trained in the quarter of a century of its existence. ■



These students are not planning careers in the chemical field, but their rounded school curriculum includes the sciences and other subjects taught in general schools, with emphasis on music.

In the ten-minute period for recess between 45-minute classes, these youngsters, talented as they are, show that they are as adept at horseplay as any child.





IT IS A BIG MOMENT FOR ALYOSHA LYUBIMOV AS HE PLAYS A MENDELSSOHN COMPOSITION WITH A SYMPHONY ORCHESTRA CONDUCTED BY NATHAN RAKHLIN.

Lena Gilels, daughter of the famed pianist, is only nine years old and it isn't easy for her to reach the pedals when she plays.



Natasha Bogelava graduates from the school this year. Her training fills the entrance requirements for the conservatory or any college in the country.

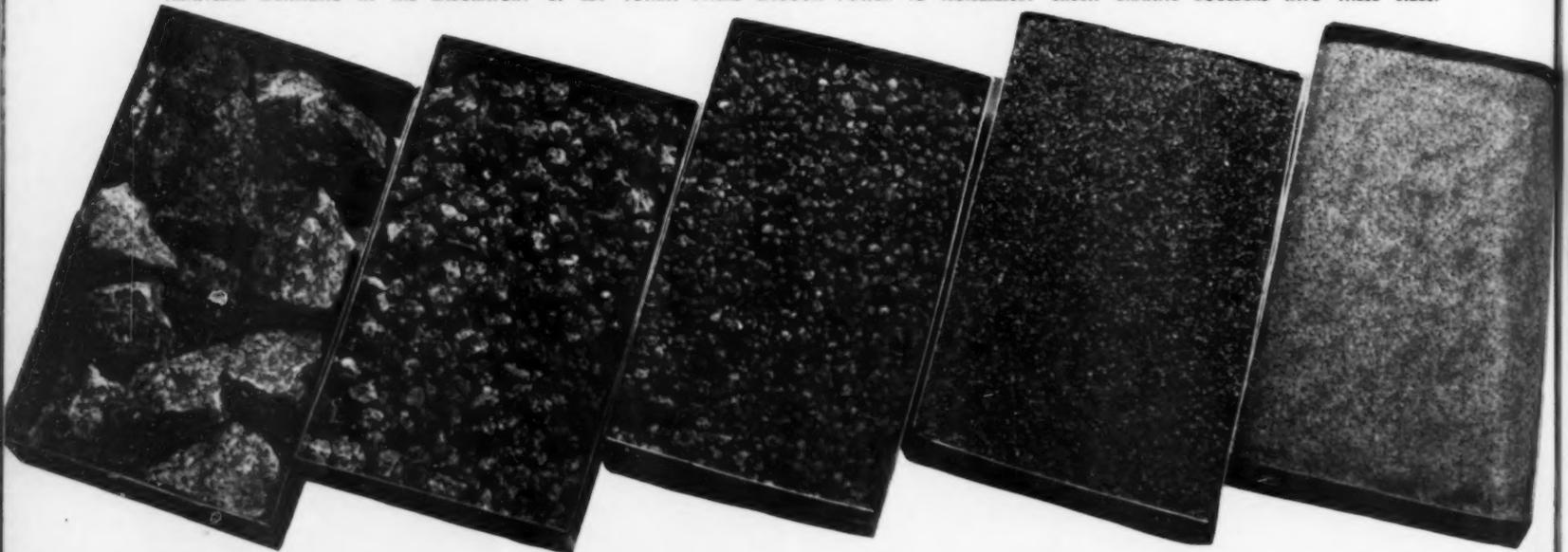




Artificial Lightning Crushes Rock

By Nikolai Stolyarov, *Engineer*

ARTIFICIAL LIGHTNING IN THE LABORATORY OF LEV YUTKIN PACKS ENOUGH POWER TO NOISELESSLY CRUSH GRANITE BOULDERS INTO THESE SIZES.





Lev Yutkin, inventor of artificial lightning that pulverizes rock with a water-borne charge.

mense, amounting to several hundred atmospheres, within the zone of the artificial lightning.

In his laboratory, Lev Yutkin demonstrates this electrohydraulic effect. In a big metallic vessel filled with ordinary water he creates a submarine thunderstorm. The artificial lightning flashes as brightly as that of nature, and the clap of thunder which follows is just as loud.

Yutkin, some years removed from his student days—he is now a middle-aged man—demonstrates his astonishing effects with a calmness at which the onlooking layman can only wonder. He points to a vessel which looks much like a tin pail. He says, in laconic explanation, "The action of this crusher is based on the principle of the cavitation impact." He places lumps of granite into the pail from the top, and from below flows a stream of pulp consisting of crushed granite and water.

Before Yutkin's extraordinary work, the only way of converting electrical energy into mechanical energy was through the use of an electric engine. He has solved the problem of direct conversion of electrical into mechanical

energy without electric engines or any other machines. In addition, this conversion has a phenomenally high efficiency.

The practical applications of the discovery are almost infinite. It can be applied in crushers for the production of building materials. It can be used for drilling oil and gas wells and for sinking mine shafts of any diameter to any depth.

Using the effect, a test model of an electrohydraulic drill an inch and a half in diameter, powered with only 625 watts, can drill a hole in solid concrete at the astonishing speed of almost 50 feet an hour. The cost of the drilling operation is tens of times cheaper than the usual method, and the drill can last almost indefinitely.

This electrohydraulic effect makes it possible to design unusually powerful forging, embossing and pressing machines. It can also be used for machines to cut articles of rolled metal right in the rolling mills.

That first streak of artificial lightning that Lev Yutkin jumped across the conductors in his vessel of water during his student days shows every sign of being harnessed to a very large and functional future. ■

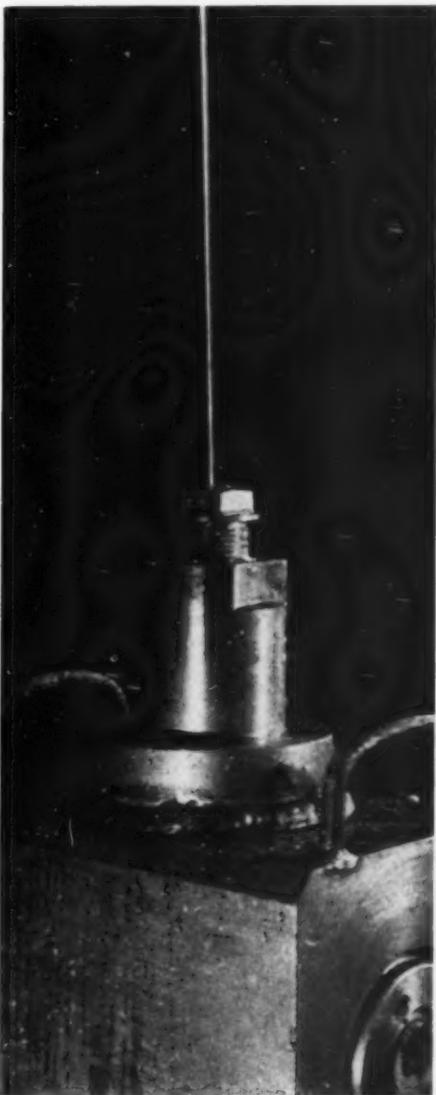
A HUGE lump of granite rests on the floor of the laboratory. A hole drilled in the center of the rock has been filled with water. An instrument called an electrical discharger is inserted into the water, a switch is turned on, and noiselessly the granite breaks up into small pieces, as though it were an overripe watermelon.

This phenomenon, known as electrohydraulic effect, was discovered by Lev Yutkin of the Leningrad Polytechnic Institute. Yutkin first came on the effect when he was a student experimenting with high-tension currents. He had placed both ends of a conductor in a vessel of water. When he turned the power on and a spark leaped across the gap between the conductors, the vessel shattered into bits.

An old physics textbook gave Yutkin a clue to explain what had happened. The book presented the following illustration: A rifle bullet is fired into a hooped wooden barrel filled with water. The barrel bursts apart. Why? It would seem incredible that so small a projectile could have burst the barrel. But the explanation lies in the water. When shot at great speed into an incompressible medium like water, the bullet builds up enormous pressure. Even though the pressure lasts a fraction of a second, it is enough to split the barrel hoops.

Lev Yutkin drew this conclusion: "A high-voltage impulse discharge in liquid acts exactly like a bullet, only with incomparably greater force."

When the liquid surrounding the electric spark is accelerated, the liquid molecules fly off in all directions to create a hydraulic impact of enormous force. The space left within the liquid by that impact is compressed. The result is a second impact, termed a cavitation impact. The two impacts, the main one and the cavitation, create pressures which are im-



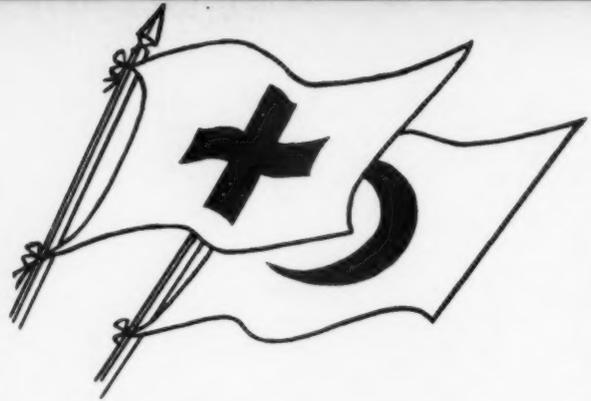
Electrohydraulic effect in this pump produces a jet of water which is able to cut through wood.



This discharger, designed by Lev Yutkin, splits a block of granite in a matter of a few seconds.



With its 24 million members and 320,000 chapters located throughout the country, the central office of the Soviet Red Cross has heavy correspondence.



THE SOVIET *RED CROSS*

By Professor Georgi Miterev

President, Union of the Red Cross and Red Crescent Societies

THE full name of our organization is the Union of Red Cross and Red Crescent Societies, since in Central Asia and some other parts of our country the cross on its flag is replaced by a crescent. This is one of the important public organizations in the Soviet Union, with its 24 million members and 320,000 local chapters in the factories, farms, offices and schools of the country's fifteen republics. Our members, all volunteers except for a small administrative staff, are of every nationality, occupation and age grouping, with a Youth Division of 7.5 million youngsters.

Red Cross members pay dues, but they are minimal: an entrance membership fee of a half ruble and from one to three rubles for annual dues. Like other public bodies in the Soviet Union, the Red Cross is organized on democratic lines. Local chapters are headed by chairmen, elected for a one-year term, and the national body by the executive committee and its presidium, both elected at a national congress.

Postage stamps and match box covers showing its many activities help popularize the Red Cross.



Professor Georgi Miterev, President of the Soviet Red Cross (left), learns about the services of the American Red Cross on a recent trip to the USA. Such visits are exchanged with many countries.





Ethiopian Emperor Haile Selassie I inspects the Soviet Red Cross Hospital at Addis Ababa which has won the trust of the local population.

The Soviet Red Cross was founded in November 1918, during the Civil War, to care for the sick and wounded. Its function is considerably broader now. It assists the public health service in disease prevention by teaching good hygiene and checking on living and working conditions. It helps the trade unions in ascertaining that safety regulations and standards are maintained in factories.

Through its first-aid posts and volunteer groups which function in all industrial and commercial establishments, the Red Cross chapters organize public lectures, radio broadcasts and telecasts, and distribute books, pamphlets, posters and the national magazine, *The Soviet Red Cross*.

The Red Cross produces and shows educational and scientific films and publishes material written by Soviet and foreign scientists which are pertinent to the organization's work.

It also helps people who wish to train for nursing, hospital work, industrial accident prevention, first aid, and related fields.

The activities of the Soviet Red Cross are much wider than the country's boundaries. We maintain hospitals and clinics in many countries. The reputation of the Soviet Red Cross hospital in Iran has spread so far that sick people come from Pakistan, India, Iraq and Afghanistan for medical help. Patients from Egypt and the Sudan come to our hospital in Ethiopia.

Recently 40 children were brought to the Soviet Red Cross hospital in Teheran in very grave condition. Dr. Tatiana Vasilchenko diagnosed serious DDT poisoning. All the resources of the hospital were marshalled to save the children. The work of the Soviet doctors was acknowledged by the grateful parents and the Teheran public.

At the request of the Ministry of Health of India, our organization set up a child health research center in New Delhi under the eminent pediatrician, Professor Nikolai Surin.

The Soviet Union annually contributes two million rubles to the United Nations Children's Fund. As its part of the contribution, our Red Cross organization sends the children of underdeveloped countries large stocks of drugs and medical equipment.

The Soviet Red Cross sends substantial aid to peoples suffering from natural disasters. When Iran was struck by an earthquake in 1953, our society sent hundreds of thousands of tons of food to the sufferers. We sent funds to flood victims in India, to natural disaster victims in Lebanon, Norway, Holland, England, Greece, Italy and elsewhere. In the past five years our society has sent aid to people in more than 30 countries.

Our friendly ties with the Red Cross societies of other countries have been strengthened with every passing year through exchange visits. In recent years we have exchanged delegations with some 30 countries. We were happy to be host to Red Cross representatives from the United States, Japan, Germany, Austria, Great Britain, Spain, France, and other countries. This, we are sure, has helped to foster international understanding and cooperation and to extend the humanitarian activities to which all Red Cross societies are pledged. ■



A relief shipment of clothing, foodstuffs and medicines is checked on the docks before being rushed abroad. Such aid has lately gone to 30 countries.

The Soviet Red Cross Hospital in Teheran, capital city of Iran, draws its patients for consultation and treatment even from neighboring countries.





STUDENT NELA SUKHACHOVA IS A REGULAR CUSTOMER.



THE TAILORING ESTABLISHMENT MOVED INTO THIS BUILDING TWO YEARS AGO.

Clothes Made To Order

By Yuri Pavlov

Photos by Dmitri Chernov

NADEZHDA IVANOVA (RIGHT), WHO WORKS IN AN ELECTRICAL APPLIANCES PLANT, LOOKS AT A FASHION MAGAZINE WHILE WAITING FOR A FITTING.



THIS tailoring establishment, situated in the center of the Ukrainian city of Lvov, was opened two years ago. It is the 201st in this city. Its annual output totals 100,000 items of men's and women's clothing.

On the weekday we visited it we found several young women busy looking through the fashion magazines spread out on the tables in the reception room. They were selecting styles and, as is usual in such cases, each customer was seeking the advice of her neighbor. But judging by the heated arguments that were in progress, nobody agreed with anybody else.

In the evening many men come here, and the wives assume the heavy responsibility of advising their husbands.

In many cases some of the staff members make the rounds of their customers. Of late they have called with samples of cloth at the local motorbus works, the railway engine-house, and several neighboring coal mines. The railway engine drivers alone put in 200 orders in a single day for suits and topcoats.

We asked Vladimir Chekalin, director, who the regular customers are.

"The people living in Lvov and the neighboring villages," he answered. "People in all walks of life—industrial workers, peasants, lumbermen from the Carpathians, college students, actors, and so forth. Today, for example, we received orders from Nela Sukhachova and Pyotr Kondratov, two Lvov University students; from Nadezhda Ivanova, an assembly-line worker at the local electrical equipment plant; from Vera Kutsenko, a saleswoman in a department store; from Areta Kravchuk, the daughter of a Lvov pastry shop worker, and a dozen others."

A wide range of woolen, silk, cotton, linen and other fabrics are available at this establishment and in local stores. And one need not worry about the quality of the tailors' work.

The regular customers know the tailors and have their favorite cutters. They come here because they prefer high-grade custom-made clothes to the ready-to-wear selection available in the stores.

"I would like Maria Panova to take care of me," says a middle-aged woman to the receptionist.

There are many skilled tailors and dressmakers in this establishment, but whenever a discriminating customer wants the very best in dresses, Maria Panova has to step in. "A real artist in dressmaking," that was how the local paper *Lvov Pravda* described her.

The shop has a staff of about forty. Some of its members, Joseph Praizner, Pyotr Zverinsky, Maria Panova and Pyotr Kravchuk, for instance, have been in the trade for several decades. They have trained a goodly number of beginners.

At present there are fourteen apprentices at this tailoring establishment. They came here after finishing secondary school and will have to go through a training period of two years. During this time they will be receiving a stipend of 350 rubles a month. They are trained by the very best cutters, who receive an additional remuneration for teaching.

The cutters have designed many samples of various items of clothing. Before these samples are made up, they are examined by the Art Council, which includes some of the regular

customers. Occasionally the designer is requested to alter the sample. This may happen for reasons ranging from the cut to the finishing. If the sample is accepted, it is shown in a fashion magazine published in Kiev.

An 800-ruble bonus is paid to the designer of an accepted sample. These bonuses have be-

come a regular addition to the regular monthly earnings of the best tailors.

Because tailoring establishment No. 201 is putting out fine clothes at a reasonable price and fills its orders without delay, its list of regular customers is growing with each passing year. ■

PYOTR ZVERINSKY, CHILDREN'S DEPARTMENT CUTTER, IS VERY FOND OF HIS UNPREDICTABLE CLIENTELE.





AN UNUSUAL FRIENDSHIP



USING NEITHER SHOUTS NOR BLOWS, MARGARITA NAZAROVA'S SHEER WILL FORCES THE TIGERS TO OBEY HER.



CUBS HAVE THEIR FIRST RIDE IN AN AUTOMOBILE.

IT IS a summer afternoon. A young girl in a bright kerchief, jacket and high boots is walking along a trail leading to a river. In her hand is a basket full of grapes. She is humming a tune, completely unaware that a huge tiger is stalking some ten yards behind her. His eyes are steadily fixed on his victim. Now his powerful body is poised to spring. Another instant and the tiger makes a giant leap, sprawling over the prostrate body of the girl.

The triumphant roar of the tiger and the cry of the girl re-echo through the forest. But the tiger suddenly relaxes his grip of the girl, sits down on his hind legs and turns away guiltily. The angry girl sitting on the ground in front of the tiger sets her kerchief right, hits the tiger on the nose with her hand and scolds:

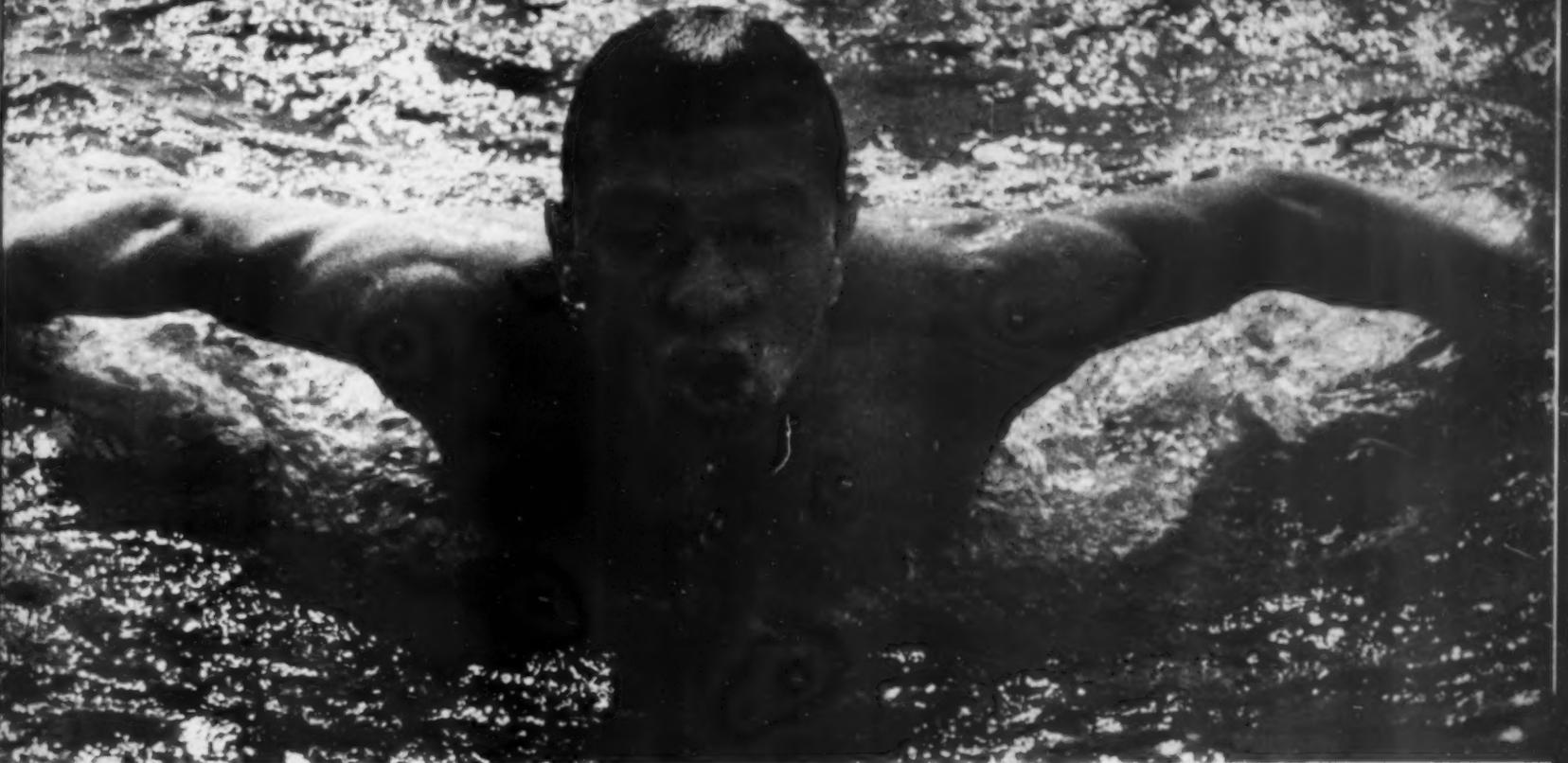
"You crazy one, what sort of joke is this? Look at the grapes all over the ground!"

This is no fairy tale. It is an episode from a color film about the animal trainer Margarita Nazarova, made in a virgin forest where the tiger Pursh was set at large. But the force of the training habit was so strong that



THE PLAYFUL CUBS LIKE A DRESSING ROOM ROMP.

ATHLETES



THE VILLAGERS WANT TO BUILD THEIR OWN SWIMMING POOL. "WE'LL DIG THE HOLE," THEY SAY, "AND THE COLLECTIVE FARM BOARD CAN PAY ENGINEERS TO FINISH IT UP."

When I told him what I had come for, he wiped the oil smudges off his face and told me to get in the car. "Today is Sunday, so you'll be able to talk to as many of them as you want to. They're driving me crazy—these discus throwers and weightlifters and runners. But I shouldn't complain, it's my fault. I started the whole thing."

Whatever it was he had started, it was obvious he wasn't too happy about it. While he was driving me to the stadium, it came out. It appeared that seven years ago nobody in Dinskaya knew much about real sports, or cared particularly. The collective farm was doing a lot of building at the time—two schools, a hospital, a power plant, a clubhouse—and the architects suggested that it would be a good time to lay out a stadium.

"We had the money," Pereverzev said gloomily, "so naturally the members of the farm managing board went along with the idea. Good for the young people, and all that. I spoke up for it myself. That's when all my headaches began. At first everybody was satisfied. Mostly they played soccer at the new stadium, everything peaceful and quiet. Then suddenly they all started to go

Continued on next page

Soccer teams are composed of men and boys from nearby villages. Training for it is rigorous, but helps develop players of varsity caliber for big-time competition in this choice sport.





Dinskaya athletes often compete with neighboring teams. This is the start of the 1,500-meter run in an inter-village track and field meet.

A DEMONSTRATION OF THE OLD SAYING: "A KUBAN COSSACK IS BORN TO RIDE IN A SADDLE."



FARM-BRED ATHLETES

Continued

crazy. It was like everybody in the village got the fever at the same time—nothing but sports. The stadium began to be crowded with runners, discus and hammer throwers and jumpers—you know, the ones with a pole."

"Pole vaulters," I helped him out.

"Yes. Then somebody went and counted these sportsmen and it turned out there were more than a thousand of them in the neighborhood. So it began. They wouldn't leave me in peace. First one bunch comes and wants a gymnasium built, another wants a court laid out somewhere for outdoor basketball, another bunch has to have uniforms and equipment."

I clucked sympathetically and mumbled something about the problems of a collective farm chairman.

"Once," he said, much aggrieved, "they even called a meeting of bicycle owners. Victor Sorokin . . ."—it turned out that he was the farm zootechnician and a leading light among the village sportsmen—"gets up and says, 'Everybody in the village owns a bicycle, but nobody knows how to ride properly!'

"There's a big to-do and argument up and back, with Sorokin yelling, 'We ought to be ashamed to call ourselves cyclists.' The upshot of the argument was that they set up a cycling club and sent me a committee demanding that the farm board lay out the money to build a bicycle track. Sorokin sets them all burning, and I'm caught in the smoke."

By the time he got through with Sorokin we were at the stadium. It was humming. There were runners out on the cinder track, soccer players kicking goals, discus men winding up. There didn't seem to be an empty corner of the field left. Stacked up against the stadium fence were bicycles, motorcycles and scooters.

"See what I mean?" the chairman said. He gave me a cigarette, lit it for me. "Here's another business they got me tangled up in—a swimming team. Another delegation. 'We can't swim in the river, the current is too swift. Lay out the cash, chairman, for a swimming pool. We'll dig the hole ourselves and you get the engineers to finish it up.' It's simply fantastic. What are they going to ask for next?"

"Victor, Victor," the chairman yelled to a young man who had just rode up on his bicycle and greeted him like a long lost brother. The chairman introduced the lad to me with a beaming smile. "This is Victor Sorokin, the big sportsman around here. He'll take you around. I have to get going. There's a training class for amateur auto racers and I can't miss it."

He got into his car, turned it around on two wheels. All I did was look on, a little bewildered as he waved me good-by. ■

Pyotr Kolomeyets, 75-year-old shepherd, and a grandson are implacable rivals over checkers.







A CHILDRENS' SUMMER CAMP ON LAKE ISSYK-KUL (See story on page 26)

ДЕТСКОЕ ЛЕТНЕЕ ЛАГЕРЬ НА ОЗЕРЕ ИССЫК-КУЛ

