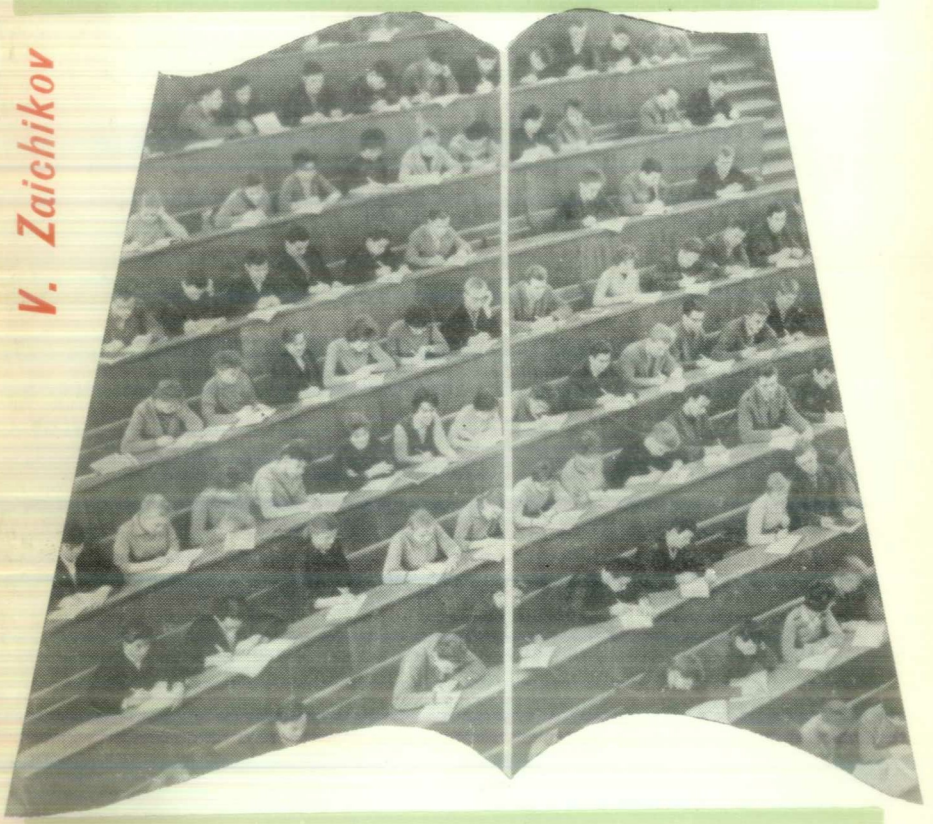
ACADEMY FOR MILLIONS

V. Zaichikov



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NOVOSTI PRESS AGENCY PUBLISHING HOUSE

Vasily Zaichikov

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Contents

A Unique Educational Organization

This is the story of a unique and vast educational organization the like of which history has never known before. Popularly called an academy for millions, it is the All-Union Society *Znaniye* (Knowledge) which disseminates an enormous range of scientific, technological, political and cultural knowledge among a very large mass of people.

The society's 1,500,000 members deliver some 15,000,000 lectures a year. Their daily audience comprises 2,500,000 people. This splendid record was proudly noted by the delegates to the society's Fourth Congress held in June 1964 in the Grand Kremlin Palace.

The delegates included Academician I. I. Artobolevsky, an eminent authority on machine theory. One of the founders and a leading member of the society, he is particularly concerned with its Polytechnical Museum and Polytechnical Library which now has 3,000,000 volumes and annually acquires some 120,000 new books.

Reviewing the history of the library, Academician Artobolevsky recalled that long ago Russia had had the Society for the Advancement of Natural Sciences, Anthropology and Ethnography, attached to Moscow University. The society aimed at "promoting the independent development of the natural sciences in Russia... and the diffusion of knowledge from the scientist's study to the people for their mental enrichment." To further these noble aims the society decided to establish a technical library. It was started in September 1864 with seven books donated by the society's President, G. Y. Shurovsky, and one of its members,

Mr. Kertseli. This growth from seven volumes to 3,000,000 is indeed symbolic of Russia's amazing progress from wooden plough to the conquest of outer space.

Observing the assembly in the Grand Kremlin Palace, Oleg Pisarzhevsky, the popular-science writer, recalled the 20's when an all-Russia rally of rural librarians was held in a small hall in Sverdlov University. In those days the village library-cum-reading-rooms were the principal community centres of enlightenment and culture in the countryside. People of different ages and dialects had been present then. A tow-haired lad from Ryazan Region wearing neat bast shoes sat next to a seventy-year-old bee-keeper from the Urals who used first to lure his young village folk with honey then read to them Alexander Serafimovich's *The Iron Flood* or Leo Tolstoy's *Resurrection*.

This comparison of the two meetings denotes an affinity of the epochs rather than a contrast. Indeed, Soviet people have not only reconstructed the material foundations of their life, they have made fantastic scientific advance which has drawn a mass of fresh talent from their own midst. Today's great legion of enthusiasts who are daily bringing to millions of people knowledge of the latest scientific and technological developments, had glorious predecessors whose efforts in enlightening the people will never be forgotten. Such were the rural librarians who by the dim, flickering light of a wick-lamp told illiterate peasants of the then almost incredible plan for the electrification of the country. Such were the volunteer propagandists who in patched coats and worn shoes walked miles of muddy roads to remote mineral prospecting parties to tell them of how the capitalist world was compelled to reconcile itself to the existence of the Soviet Republic, and even to acknowledge its early successes.

These recollections came naturally to the Congress delegates. Looking into the past, perceiving the live threads of succession, they spoke, reflected, argued about the days to come and in their mind's eye charted a road from the present to the future.

Addressing the Congress, Academician N. N. Semyonov, a Nobel Prize winner, said: "Imagine that the overwhelming majority of people of our country, from government leaders to workers and farmers, are well equipped with all the necessary up-to-date knowledge and have the know-how to apply this knowledge creatively in their work. Our country will then make unparalleled progress.

"Based as it is on voluntary activity, this collective self-education would promote the introduction into the economy of all the latest discoveries in science and technology and this introduction would be effected rapidly and to good effect.

"Communist society's high standard of technology and production will be created by the joint efforts of the working people and under their control. All inertness, fear of innovations, incompatibility of personal interest with the common weal will wear away forever.

"So far this is a vision of the bright communist future. But it is drawing nearer, and the more we develop the initiative of the working people in acquiring comprehensive knowledge, the sooner it will come."

Deep Roots

The broad, unprecedented effort of the Soviet intelligentsia to diffuse all-round knowledge among the people is a sure and universally acknowledged manifestation of the development of socialist culture. But socialist culture does not spring up on bare ground. In its rise and development it draws on the best progressive heritage of world and national culture, stems naturally from the whole intellectual wealth accumulated by mankind. So, too, the sources of the present great movement to disseminate knowledge among the people are deeply rooted in history.

The foremost Russian scientists and scholars never secluded themselves in their studies and laboratories, but considered it their sacred duty to promote the spiritual growth of the working people.

As true patriots they held that the future of their country, the development of its productive forces, as well as the all-round scientific and cultural progress, depended on the education of the people in the broadest sense of the word. A hundred years ago Dmitry Pisarev, the Russian writer and philosopher, said: "Combine knowledge with labour, give knowledge to the people who by necessity will draw from it all its practical benefits, and you will see that the wealth of our country and people will begin to grow with astounding speed."

Even in the worst years of tsarism, in the difficult and suffocating atmosphere of reaction, Russian intellectuals carried knowledge to the common people. Despite rigid censorship, persecution and repression, they set up voluntary educational societies, read popular scientific lectures at all kinds of courses and meetings.

Since the brilliant popular lectures by Professor T.N. Granovsky of Moscow University over 120 years ago, public lectures have become a traditional form of imparting knowledge in Russia.

Recalling Granovsky's lectures, his close friend, A. Herzen, the distinguished Russian writer, philosopher and revolutionary democrat, wrote: "His speech was lucid, extremely serious, forceful, bold and poetical, which powerfully impressed and stirred his audiences."

The world-famous Russian scientist D. I. Mendeleyev, the author of the Periodic Table of Elements, regarded dissemination of learning among the people as his "second aim in life." He saw in the spread of education the fulfilment of his dream about the rational use of his country's natural resources and the creative power of its people. Sparing no effort to make "the crops of learning available for the people to reap," as he put it, Mendeleyev worked hard on his lectures which fired the audiences.

Another great Russian popularizer of learning was K. A. Timiryazev, the eminent Darwinian biologist, botanist and physiologist, whose services to world science were recognized by his election to the Royal Society of London, the granting to him of honorary doctorships from Cambridge, Glasgow and Geneva universities, and his election to the Edinburgh and Manchester Botanical Societies. His splendid lectures accompanied by practical demonstrations, their lucidity and depth, their stimulating and inspiring content are classical examples of the popularization of learning. All his life Timiryazev strove to bridge the gulf between learning and the people. He described men of learning as "marching ahead in the lustre of electricity while far behind millions plodded along, stumbling in blind darkness."

Timiryazev dreamt of a broad diffusion of knowledge. Urging the learned to remember their high civic duty, he wrote: "Learning has no right to seclude itself in its sanctuary, keep away from the crowd and demand that the people take its word for its usefulness. Men of learning. . . must not forget that they are servants of society, that they must appear before it from time to time, as before a master to whom they must give account. They must tell society: here is what we have accomplished, here is what we are doing, and here is what we are going to do; judge how useful our work is now and what promise it holds for the future." He dreamt of an "expiation of the historic injustice," i.e., the unjust division

of the benefits of civilization between workers of mental and physical labour.

Also a passionate propagandist of learning was I. M. Sechenov, the founder of physiology in Russia, a scientist of world renown, after whom the First Moscow Medical Institute is now named.

In 1903, when he was already 74 years old, Sechenov gave a course of lectures on the anatomy and physiology of man at a workers' school. Referring to this school in his autobiographical notes Sechenov wrote: "My respect for this audience rose even higher when I learned that some of the workers had hurried to these lectures after the evening shift in a factory at the other end of the city. May this fine institution, the prototype of a people's university, live and expand." On the eve of the revolution of 1905 the tsarist police prohibited Sechenov from reading these lectures.

Under tsarism there was nothing exceptional in this measure. Thus, when the Governor of Tobolsk informed Alexander III that practically no one in Siberia could read and write, the emperor wrote on this communication: "Thank God."

This view was held not only by the Russian tsar. He only expressed with brutal frankness what other "powers that be" put into more elegant form. But the essence was the same.

Knowledge gives strength, and the educated and the strong always strove to make knowledge their caste and class monopoly, keeping it from the ignorant, from the mass of the people. So it has been from time immemorial.

Under these conditions, even the most heroic, the most self-sacrificing efforts of individual men of learning could yield no tangible results. Still, their efforts will never be forgotten. The democratic traditions of the Russian science are sacredly preserved and continued by the Soviet intelligentsia.

Knowledge Gives Strength

A yearning for knowledge has always been man's most fundamental characteristic. "A need for education," said the great Russian writer and thinker Leo Tolstoy, "lies in every person; people love and seek education as they love and seek air to breathe." The ability of a social system to satisfy that yearning is a measure of its maturity.

There is a deep bond between learning and true democracy. Indeed, what is the worth of learning if it is inaccessible to the people? They have an inalienable right to learning because it was their labour that started it and fostered it all the time. It is unjust, to say the least, to deprive people of what rightfully belongs to them. Man does not exist for the sake of knowledge; learning came from man's fundamental need to harness the forces of nature in order to create better living conditions for himself. In this sense, a socialist revolution necessarily incorporates a cultural revolution, which means radical changes in the distribution of all the material and spiritual benefits of world civilization.

One should not get the idea that socialism is possible in a country where people are illiterate. After all, socialism means more than nationalization of the means of production. Socialism means the ability collectively to work, to create and to govern the country collectively. It presupposes profound processes in the development of the collective as such. All this involves the masses, millions of people, rather than scores or hundreds. And "what sort of equality can you have," Soviet President Mikhail Kalinin remarked in 1924, "while there are illiterate people in the Soviet state? Only when illiteracy is abolished can we raise in earnest the problem of equality among people."

The establishment of Soviet power in Russia inaugurated a cultural revolution in the country. It will be remembered that Soviet power which set itself the aim of building the most just society in the world, based on the principle "From each according to his ability to each according to his needs," was won by the people of a very backward country. "There is no other country," Lenin wrote in 1913, "so barbarous and in which the mass of the people are *robbed* to such an extent of education, light and knowledge—no other such country has remained in Europe; Russia is the exception."

Such was the country, with three-quarters of its population illiterate, where the working people took power. They took it to build a new life. And they realized that creative power lay not only in the hands but, above all, in the brain.

The leaders of the young Soviet state were well aware that the great aims of the revolution could be achieved only when the light of knowledge illumined the working people, and when knowledge ruled them.

Meanwhile, however, the proletariat had no trained specialists of its own; the workers and peasants had no experience of governing. Moreover, a section of the bourgeois intelligentsia tried to

sabotage the undertakings of the Soviet Government. The enemies of the young Soviet Republic gloated: "We'll see how illiterate cooks will govern the country."

Today everybody can see how the common people governed and are governing. But it has not all been smooth sailing, it required tremendous effort, including the dissemination of knowledge among the people.

It is fortunate that the older generation of Russian revolutionaries appreciated the value of knowledge. Immediately after the seizure of power they urged the youth to master modern knowledge, stressing that it was their revolutionary duty to do so. In the workers' and peasants' state all the enthusiasm that the youth had previously spent on revolutionary struggle had to be directed at mastering science and technology.

Illustrative of this is a letter to his children by N. I. Podvoisky who during the October Revolution headed the Petrograd Military Revolutionary Committee and personally directed the storming of the Winter Palace. "I knew appallingly little," he wrote, "had read virtually nothing. So long as I had enormous strength I made up for my lack of knowledge and training by sheer effort in tackling any problem. But when the socialist economy, sociology and technology began to develop, I felt that I was suffocating from my lack of knowledge and from a lack of professional training.

"That you should not suffer the same fate, I advise you to learn, learn and learn again. And not only to train yourselves for a particular immediate task. Learn and learn all your lives to be always prepared to meet the country's requirements at any given moment.

"Remember that socialism is an accelerating movement, advancing ever higher and higher, and with more and more skilled forces."

A general call for knowledge swept the land. Young and old flocked to classrooms. Ill-clad and ill-fed, eager to learn. Here, too, the people had to overcome the resistance of hostile elements from among the intelligentsia who reasoned: "The less the ignorant workers learn, the better for us."

Some professors were contemptuous of the "cooks' children" who yearned for knowledge. At a lecture in the Moscow Transport Engineering Institute, a professor, seeing a girl student wearing a head-scarf like a peasant, remarked caustically: "You, young lady, dare to come to the temple of learning with a dirty

rag round your head as if this were a cattle yard. May I ask if you can hear anything, and if you can, have you understood what was said here?"

The class was shocked. Evidently realizing that he had gone too far the professor fell silent. The girl ran to the door. Then Victor Bakayev, a Communist, today Minister of the USSR Merchant Marine, stood up and said quietly: "We plain workers are ashamed of you, professor. Don't fear, no one will touch you, we came here to learn and learn we shall at any cost. Don't waste time, go on with your lecture."

Soon Victor appeared before the same professor for his examination. The examiner tried his best to fail the student. But finally he gave up, saying: "I must say, young man, that you know the subject very well. Your zeal is quite commendable, I shall give you a high mark.

The working class displayed a deep interest in training a scientific and technical intelligentsia from its own ranks. Here, for example, is what the workers of the First State Colliery in the Donbass wrote at the time to the students of the Moscow Mining Academy: "Desiring to help in the training of our own proletarian mining specialists, we have produced 2,000 poods of anthracite from the Artyom Pit for the needs of the Academy." And added: "We are doing our best to help you to acquire knowledge as quickly as possible, to come back to our mines and make our work easier. We believe in you and together, combining labour and learning, we shall win."

What H.G. Wells Could Not See

From the very beginning, the Soviet Government unstintingly developed the schools at all levels. The results speak for themselves.

What is perhaps less known is how school education is augmented and supplemented by the widest dissemination of knowledge through all possible channels. Without considering this important factor of Soviet life it is impossible to understand the essence and see the advantages of the Soviet educational system.

One of the first tasks of the Soviet Government was to make knowledge accessible to all the people.

First of all, such media as the press and books were put at the service of the working people. The veteran Soviet authoress, Marietta Shaginyan, recalls that at the First Congress of Soviet

Writers in 1934, a French guest told her that some Soviet books were repulsive to him for their being overtly inclined to teach, for being didactic. Indeed, anyone who knew something was rather didactic in those days. He had to be—to help the millions of new readers make up for their lack of education.

Next to the press and books radio became an important medium of spreading knowledge. From its very first broadcasts it started to give its listeners a wide range of educative information.

No wonder the new Government made the dissemination of knowledge among the people one of its most urgent concerns. For this government is a government of the people, of the workers and farmers. And the strength of a people's state lies in its boundless support by the mass of the working people. "The bourgeoisie," Lenin said, "admit a state to be strong only when they can, by the power of the government apparatus, hurl the people wherever the bourgeois rulers want them hurled. Our idea of strength is different. Our idea is that a state is strong when the people are politically conscious. It is strong when the people know everything, can form an opinion on everything and do everything consciously."

From the very beginning, the Soviet Government set out to run the country on strictly scientific lines and work out a policy in the interests of the people and understood by them.

It is appropriate to recall here the following instructive event from Soviet history. In December 1920 the Eighth All-Russia Congress of Soviets (then the Soviet Parliament) adopted the famous GOELRO plan for the electrification of Russia, which aimed at changing the face of the country, fundamentally refashioning its economy and laying a firm foundation for socialism. Sitting in the unheated and poorly-lit Bolshoi Theatre, delegates from all parts of the country listened with bated breath to the report on the fascinating, bold plan of socialist construction.

In its resolution the Congress expressed confidence that the workers and peasants would carry out the plan for the electrification of Russia "at all costs and notwithstanding all obstacles." So they did. By the end of 1935 the GOELRO target was exceeded fourfold. Yet, when the plan was being drafted many people considered it an unrealizable dream.

At the end of 1920 H. G. Wells visited Moscow and had a conversation with Lenin. On his return to England Wells wrote a book entitled "Russia in the Shadows" in which he described Lenin as the "dreamer in the Kremlin." Wells was sympathetic

towards Soviet Russia. Although in his book he repeatedly pointed out his disagreement with Marxism, he acknowledged that the Soviet Government had the support of the people and the Communists were conducting tremendous constructive and educational work. Nevertheless, he regarded the Russian electrification plan as an "utopia of the electricians."

"Can one imagine," he wrote, "a more courageous project in a vast flat land of forests and illiterate peasants, with no water power, with no technical skill available, and with trade and industry at the last gasp?... I cannot see anything of the sort happening in this dark crystal of Russia, but this little man at the Kremlin can; he sees the decaying railways replaced by a new electric transport, sees new roadways spreading throughout the land, sees a new and happier communist industrialism arising."

Lenin had faith in the plan because he had faith in the creative power of the people. For the electrification *idea* to become a *material force*, a whole programme of equipping the people with knowledge of electricity was drawn up simultaneously. In its resolution on the electrification plan, the Eighth Congress of Soviets laid great emphasis on "taking all measures for the widest popularization of the plan and bringing it home to the people in town and country. The plan shall be put on the curricula of all educational establishments in the Republic without exception. Every electric station and every more or less tolerably equipped factory and state farm shall become a centre for acquainting the people with electricity and modern industry, as well as a centre for popularizing the electrification plan and giving systematic instruction about it. All persons having scientific or practical training shall be mobilized to popularize the electrification plan and teach all that is necessary to understand it."

In addition to that Lenin soon drafted an order of the Council of Labour and Defence to the local Soviet institutions requesting them to answer the following questions: "Do the local regional and district libraries have the Plan for the Electrification of the RSFSR and the Report to the Eighth Congress of Soviets? How many copies?

"If they do not have it, that means that the local delegates to the Eighth Congress of Soviets are either dishonest people who should be expelled from the Party and removed from their responsible posts, or else they are loafers who should be jailed, which will teach them to perform their duty (some 1,500-2,000 copies were distributed at the Eighth Congress of Soviets for local libraries).

"What measures have been taken in pursuance of the decision of the Eighth Congress of Soviets to widely popularize the electrification plan? How many articles about it have appeared in the local newspapers? How many lectures have been delivered? How many people attended them?

"Have all local officials possessing theoretical or practical knowledge of electricity been mobilized to read such lectures and give instruction in electricity? How many such officials are there? How is their work conducted?

"Are nearby electric stations used for lectures and instruction? How many are there?

"At how many educational establishments has instruction about the electrification plan been introduced in fulfilment of the decision of the Eighth Congress of Soviets?"

These were the questions contained in the order of the highest governmental body. It was endorsed by the Presidium of the All-Russia Central Executive Committee and was obligatory for all organizations and institutions on the territory of Soviet Russia.

This should be recalled to get a clearer idea of the tremendous role that has been and is being played by the dissemination of scientific and technical knowledge in mobilizing the energy of the people to further the great transformations in all spheres of life in the Soviet Union.

As the scope of the changes broadens and the tasks become more complex, the dissemination of knowledge expands, its forms and methods improve, and more favourable conditions for it occur. The working class and the peasants have trained a new people's intelligentsia from their midst. With the advancement of the general education of the working people, their cultural level has risen. The growing complexity of production increases the quest for knowledge among the workers of all trades. As the workday grows shorter, all the working people have more time for mastering the achievements of world civilization. All this has engendered a voluntary mass organization of Soviet intelligentsia under the motto: "Knowledge to the People."

Initial Discussion

On May Day 1947, a group of scientists, public leaders and artists published an appeal to the Soviet intelligentsia and scientific institutions calling on them to set up a nationwide society for the

dissemination of political and scientific knowledge. This call immediately met with warm approval and support from people in all walks of life all over the country. The sponsoring committee received letters from many prominent scientists, from many professional people in all fields of endeavour, and from workers, peasants and students. They all expressed their hearty approval of the idea of establishing such a society, pledged their help, and submitted valuable practical suggestions.

In July of the same year the society held an inaugural meeting which elected a board and adopted the society's constitution. The then President of the Academy of Sciences of the USSR, Sergei Vavilov was elected Chairman of the Board. It was no accident that the President of the Academy of Sciences was chosen to head the society. The organization was to become a connecting link between science, represented by the Academy of Sciences, and the people. The problem then was to find an appropriate organizational form of this link.

Diverse views of its aims and character were expressed during the preparation for the inaugural meeting.

Thus, some held that the society should constitute an association of many Soviet specialized scientific and technical societies, similar to British and American associations. That would mean that the new organization would mainly unite scientists in different fields to further the progress of science in the USSR.

Others held that the society should consist of a relatively small number of distinguished scientists and cultural leaders imparting knowledge to the people.

These two divergent views indicate how widely opinions differed on the aims of the society. Therefore the inaugural meeting had first of all to define its position on this fundamental question.

The entire course of Soviet history, all the aspirations of the Soviet people clearly predicated that it would be wrong to confine the society's activities to the scientific community, to specialized scientific organizations.

It would be just as wrong for the society to have only an erudite elite enlightening the "common people." Indeed, the "common people" are now the masters of the country and they have to be treated by the intelligentsia as equals, not patronizingly, not in a supercilious manner. Dissemination of knowledge is not a unilateral affair, but a mutual enrichment of the workers and the scientists for the best attainment of the common goal. As the

great Russian scientist Ivan Pavlov once said, the people are the treasure store of knowledge, and the more the intelligentsia draws from that store, the more fruitful is the life of a nation.

All Soviet people are interested in the widest application of scientific and technological achievements in industry, in agriculture, in the public services and domestic amenities, which greatly advances material and cultural progress and promotes the growth and expansion of material and spiritual values. A scientist is interested in this both as a patriot and as a propagator of learning who is fully aware that the future of his work is determined not by narrow private interests of some capitalist employer but by its usefulness to the people.

Thus, from its very inception, the *Znaniye* society was conceived as a broad *popular organization* for exchanging knowledge and experience by the most diverse sections of the population, for their mutual spiritual enrichment. And although at first this was rather a declarative aim since only a small circle of distinguished scientists and cultural figures imparted knowledge to the people, the important thing was that at its inception the society adopted a correct line for its activity. Now it has become a real mass organization. And adherence to its basic line furthers its constant development.

The direction of this development was outlined at the last society Congress by the chairman of its Board, V. A. Kirillin, Vice-President of the Academy of Sciences. "We must always remember," he said in his report to the Congress, "that our society is a mass social organization, an academy for the millions, which disseminates scientific knowledge, furthers the realization of scientific achievements, illuminates major, yet unsolved, scientific problems."

Entire Membership Shares in Direction

Since the dissemination of knowledge was widespread from the early days of Soviet government, what new forms has the society developed? The society's fundamentally new feature is broad public initiative.

Unlike the previously existing state lecture institutions, the new society is a broad voluntary social organization run on principles of democratic self-administration. It has taken over the

functions of the Lecture Bureau of the Ministry of Higher Education and the Lecture Bureau of the Ministry of Culture. The society has also taken over the Polytechnical Museum (Moscow), the Central Polytechnical Library (Moscow), the local lecture bureaus, stationary and mobile planetariums, and Houses of Technical Propaganda. This, however, was not a mechanical transfer. The forms and methods of work of state bodies could not be automatically transferred to a social organization. The fundamental difference is that in the society the entire management is elected by the membership. The members themselves govern the affairs of the society directly or through their chosen representatives in elective bodies.

Operating under the elected boards of the All-Union Society as well as of the societies of the Union Republics and their local organizations, are permanent scientific-methodical councils and panels composed of prominent scientists. These bodies determine what topical scientific problems should be widely popularized; compile reference and bibliographical material and other scientific-methodological aids for lectures; study the quality of lectures and talks and suggest improvements. The society's scientific bodies guide and control the drafting of its publishing plans and all the work of its publishing house as well as the output of visual aids and demonstration apparatus. The society's museums, planetariums, Houses of Scientific and Technical Propaganda are similarly guided and controlled.

Let us cite one example. The society's lectures on international affairs are daily attended by some 500,000 persons. This interest in international problems may be easily appreciated if we bear in mind that today politics is not only the realm of diplomats. All over the world nations are boldly voicing the right to decide their own destinies. In its Decree on Peace, adopted right after the October Revolution, on November 8, 1917, the Soviet Union declared: "The Government abolishes secret diplomacy, and, for its part, announces its firm intention to conduct all negotiations quite openly in full view of the whole people."

Considering the tremendous interest of the Soviet people in international affairs, it is particularly important that lectures on these subjects be comprehensive and lucid. This is taken care of by one of the society's twenty scientific methodological councils, the Council on History and International Affairs, headed by Academician V. M. Khvostov. The Council includes 33 experts in international affairs.

With one full-time worker—the executive secretary—the scientific-methodological council conducts extensive activities. It studies problems of international relations, suggests subjects for lectures, elaborates methodological aids and reference material for lectures, surveys the content of popular publications, lectures and talks in the localities, compiles reviews of lectures and publications issued by the society, holds seminars. It also draws up curricula and aids for the People's Universities (see below), and publicizes their experience. Lastly, the Council examines the plans for the output of literature by the society's *Znaniye* Publishing House, recommends authors, determines the ideological and theoretical content of the society's publications.

This fact shows how the society functions through the voluntary activity of its members. In the same manner members of the society guide the work of popularizing knowledge in the centre and on the periphery.

The voluntary service of propagating knowledge is increasingly proving its worth. Local lectures for excursionists, for example, had previously been conducted everywhere by full-time workers of state excursion agencies.

In 1958 the *Znaniye* society in Kiev, capital of the Ukraine, took over this service. To carry out its new functions the Kiev society set up a voluntary local-lore group of 15 highly qualified specialists. The quality of the lectures improved tremendously, and this won high recognition.

The Government of the Ukrainian Republic instructed the society to take over the whole excursion service in the Crimea, and since January 1, 1964, the Crimean *Znaniye* society has been conducting about 100,000 local-lore lectures, in addition to its former activities.

Thus, the organizational principles of the society are an expression of the new relations between science and the people, inherent in socialism. A voluntary, self-administrating social organization best suits the task of enlisting the active services of the intelligentsia in promoting the cultural advancement of the people.

As socialist state administration gradually develops into communist public self-government, the role of the *Znaniye* society in the cultural life of the country will steadily rise. The society will eventually take over more and more functions now performed by state agencies. This conclusion is based on the Programme of the Soviet Communist Party: "Mass organizations should be given a greater part in managing cultural, health and social security

institutions; within the next few years they should be entrusted with the management of theatres and concert halls, clubs, libraries and other state-controlled cultural and educational establishments."

In Step With the Times

More than two million people daily fill the lecture halls of the *Znaniye* society.

But for all its vastness the scale of the society's activities does not astonish Soviet people. We are living at a time when our knowledge and understanding of nature expand with unprecedented speed, when the application of this knowledge to meet human needs and aspirations raises entirely new problems on which past history sheds but scanty light.

The second half of the twentieth century is marked by dynamism, by great changes in all fields of material production, science and technology, by revolutionary socio-political changes.

Never before has science so imperiously dominated human destinies. And never before has it been so hard to keep up with the rapid march of science.

In a brief span of two decades science has released the energy of the atomic nucleus, broken through into space, opened up the prospects of probing other worlds, learned to imitate some functions of the human brain, and now, in molecular biology, is unravelling the very secrets of life.

It is often said that great discoveries cause people to reassess their place in life, influence their views, their philosophy. That is true enough. But for scientific discoveries to really influence man's thinking, culture and activity, the meaning of these discoveries must be understood by ordinary people. Knowledge acquired in any school, however, soon becomes outdated.

Professor J. D. Bernal, the eminent British physicist and journalist, reckons that to keep up with the advance of technology and science which nourishes it, every worker in the leading modern industries practically has to learn his job anew every few years. And J. R. Openheimer, the American physicist, holds that every ten years the volume of scientific knowledge doubles.

It is therefore imperative to find such forms and means of propagating knowledge which will enable people to keep abreast of the latest scientific developments.

An ability to accomplish this none-too-easy task largely determines the degree of perfection and the prospects ahead of any social system.

Socialist society is vitally interested in the utmost advancement of the general cultural level of the whole population and in raising on this basis, broadly-educated specialists and workers capable of creatively and intelligently solving the problems of economic, scientific, technical, social and cultural development.

Simultaneously with ensuring scientists the full flowering of their talents and realization of their ideas, socialism creates every facility for them to convey their knowledge, findings and discoveries to the ordinary public which consequently reconstructs production on a more rational scientific basis. This stream of knowledge, of genuinely scientific, objective and authentic information on nature and society, is a characteristic feature of the Soviet way of life, a powerful accelerator to technological, economic and cultural progress.

Hence, as we advance to communism, the need for an ever wider dissemination of knowledge will grow and the facilities for it expand.

First of all, this necessity proceeds from the task set forth in the Party Programme—to rear the entire population in the spirit of scientific communism, to give all working people a profound understanding of the course and prospects of world development, to correctly evaluate national and international events in order to consciously build life in a communist way.

Communism can be built only by a community of harmoniously developed people.

Communist society is not built intuitively or empirically, but on a scientific basis, on the basis of profound knowledge and utilisation of the laws of social development. The force of Marxism-Leninism, this well-balanced teaching on the construction of communist society, lies in the fact that since its very inception it imbibed, assimilated and digested all that was valuable in the more than 2,000-year development of human thought and culture. Hence the exacting demands made of adherents of this teaching. One can only become a Communist, Lenin said, when one has

enriched one's mind with the knowledge of all the wealth accumulated by mankind.

The building of communism is a complex and multi-sided process demanding of each person a profound knowledge of his job, for only on the basis of such knowledge is it possible to make the correct decisions, prompted by the situation under given conditions.

Under socialism big enterprises have unlimited opportunities of applying all that is new and progressive in science and practical experience. At the same time this social formation, where everything in the national economy is interconnected, demands a particularly vigilant attitude to the selection and introduction of methods of organizing production: a single engineering, technical or economic error can cause serious damage.

Supposing a competent agricultural expert or scientist were to address a hundred peasants and offer some suggestions. Naturally not all the peasants would follow his advice forthwith. Some 3 or 5 would give it a try. If the results were good, 20-30 farmers would try it the next year and subsequently, the others. If the advice turned out to be impractical, the first 3-5 peasants would certainly incur certain losses, and the rest would not even think of following suit. The matter would end there.

The situation is entirely different in a big planned economy, particularly when recommendations are almost obligatory for farm managers.

Here an ill-considered recommendation can cause great damage to many farms and not just one or two. Unfortunately, such things have happened in agriculture and the organization of production—agricultural production, above all.

The Central Committee of the CPSU and the Soviet Government have put an end to high-hand administration in economic management. These decisions are by no means of a purely economic character. Actually, it concerns a whole complex of problems pertaining to all aspects of Soviet life, to the further expansion of socialist democratism, the development and perfection of such forms of organization where every workingman can and must display a highly conscientious attitude to work, be independent, show creative initiative, and invest all the riches of his spiritual world in his work, in any sphere of activity.

In order to involve all the people in elaborating and implementing a scientifically substantiated economic policy it is imperative to improve the knowledge and cultural standards of industrial workers.

This means the broadest masses of working people and not just organizers and managers. It requires the kind of zeal shown by Lenin in the first years of Soviet power when he sought to draw everybody—from workers to scientists and ministers—into the movement for the scientific organisation of labour that evolved at the time, to place valuable practical experience in organising labour within the reach of all.

Knowledge and skill have become the prime condition of industrial and agricultural development. Application of scientific achievements is becoming an everyday matter for millions of workers in all fields of production. This presents much higher and ever mounting requirements for their training. And the *Znaniye* society sees to it that everyone who wants to improve his qualifications is helped to do so.

This is but one, though indeed a highly essential, feature of its work. Knowledge must be still more widely disseminated for every Soviet citizen to competently take an active part in running the state and in managing his factory, collective farm, institution or office. Education of the mass of the people is a vivid manifestation of spiritual freedom. The rise of new social relations, the all-round development of socialist democracy, the ever widening enlistment of people in directing economic and cultural construction, the tasks of expanding and strengthening public control, make it ever more urgent and necessary for the people to gain knowledge in economics, philosophy, law, pedagogy and other social sciences. All these requirements the *Znaniye* society endeavours to meet as fully as possible.

The free, all-round development of the individual being the very essence of communism, the supreme humanist ideal of mankind, helping to mould the new man is perhaps the noblest task of the *Znaniye* society. Indeed, the harmonious development of the individual presupposes comprehensive and ever growing knowledge of the social and natural sciences, literature and art, medicine and, last but not least, physical education. Character-moulding is impossible without enrichment with knowledge—and all true knowledge is educative.

Comprehensive popularization of knowledge has the aim of fostering a broad outlook and a high standard of culture. This was well defined by Academician Anatoli Lunacharsky, the first People's Commissar of Education and one of the founders of Soviet culture: "If no one knew what medicine was doing in its field, sociology in its field, geography in its field, astronomy in

its field; if no one knew anything about chemistry and mechanics, biology and pedagogy; if everyone knew only his own work and nothing about the work done by others—culture would disintegrate.

An educated person is one who should know all about one thing and a little about everything. Such a person hears the whole concert played around him, all sounds are accessible to him, they all fuse into one harmony which we call culture. At the same time he plays one instrument, plays it well and makes his valuable contribution to the common harmony. . ."

Thus, both the construction of the material and technical basis of communism, the shaping of new social relations, and the tasks of moulding the new man, dictate the necessity of vastly expanding the diffusion of knowledge. It is an objective necessity. But are there any real possibilities for meeting it? The experience of the work already done by the *Znaniye* society shows positively that there are.

At the beginning the society gave about 100,000 lectures a year. Now this figure has grown to 15,000,000. And this is far from the limit. The teaching staff of the Agricultural Institute in Kirghizia give more than a thousand lectures a year on collective and state farms in their republic. If all college teachers were as active, they alone could read more than 14,000,000 popular lectures. And they are but one—and far from the most numerous—section of Soviet intelligentsia.

The society membership of nearly 1,500,000 is quite an army. But things are measured by comparison. And this shows that working in the society today are but a little over a third of the country's scientists who have a doctor's or candidate's degree, less than a quarter of the schoolteachers and doctors, about a fifth of the farm specialists, and a still smaller percentage of engineers and technicians. Hence, there are vast possibilities for expanding the propagation of knowledge by enlisting more and more educated people.

Sources of Inspiration

One may ask whether it is right to endeavour to enlist the bulk of the intelligentsia into the social work of disseminating knowledge. Is it feasible considering that it is a purely voluntary matter? Above all, what impels Soviet intellectuals to give gratuitously their time and energy to the rather burdensome and laborious work of popularizing knowledge?

First, it is an awareness of their common responsibility for their country's progress, a realization of their duty to the people. and a deep satisfaction at giving people the benefit and joy of knowledge.

When, for example, Academician A. I. Berg, assistant chairman of the editorial board for the society's *Science and Mankind* yearbook goes over it page by page, he doesn't do it because he has to—no individual and no organization of the society has the right to insist on it—nor is it a matter of earning extra money. He enjoys doing the work, realizing its significance and usefulness. There is no end to such examples which constitute the very essence of the work of the *Znaniye* society.

Such things are hard to understand unless one considers the character of the social system which has engendered them. The very conditions of life and work under socialism induce intellectuals to take care that knowledge is broadcast among the people.

Take a doctor, for instance. Medical service in the USSR is free. A doctor's salary does not change with the number of patients he sees. He is responsible for the state of public health in his neighbourhood. This follows from the basic principle of the Soviet health service which concentrates on preventing disease. Thus, it is only natural that every doctor should be concerned with education of the population in hygiene. That is why the *Znaniye* society has so many doctors—over 100,000—among its members. The same is true of any other section of the society's membership.

One should also note the following important fact. The nature of socialism is such that it precludes the possibility of a person drawing benefits from society without himself contributing to the common weal. This is equally true of both the material and spiritual aspects of life.

In this sense the word "gratuitous" as applied to dissemination of knowledge is inaccurate. Actually there is an exchange of activities for mutual spiritual enrichment. The time is coming when, as the outstanding 19th century Russian public figure and revolutionary, N. V. Shchelgunov, said, "Learning, as a storehouse of knowledge, will be open to all; let everyone take what he needs." This aim is furthered by the *Znaniye* society in advancing the Soviet people to the communist exchange of activities, to the highest standard of human relations when science and knowledge will be possessed by one and all.

Lastly, there is yet another important circumstance which explains the ever growing participation of intellectuals in disseminating knowledge. It is their awareness that there is a direct bond between this work and the quick and effective practical application of scientific discoveries.

The bond between science and production is maintained through the following chain: research—popularization—application. All the links of the chain are equally important. Without popularization scientist's findings cannot become known widely. Without that they cannot be applied. And if they are not applied, of what good is science to society, to the people?

The bulk of the scientific community regard dissemination of knowledge as no less important and honourable than their research work.

Let us cite the following illustrative example. In 1957, the Academy of Sciences opened its Siberian Branch in Novosibirsk. The Branch attracted many prominent Soviet scientists. That is understandable enough. Siberia presents boundless scope for the researcher. It is a vast region equal in size to the whole of Europe. Comprising an area of 10,000,000 square kilometres, it is a treasure-store of fabulous wealth. Its coal resources are three times as large as those of the United States.

There is not a single element in the Periodic Table which is lacking in the Siberian treasure-store. Siberia's coal resources account for more than half of the world's deposits. Geologists figuratively call Siberia an island floating on an underground ocean of oil.

This exceedingly rich territory slumbered for a very long time. "Siberia" in the language of an ancient local tribe means "a sleeping land." Probably, it would be more fitting to call present-day Siberia a "sleepless land;" Siberia is growing and building, and advancing.

Siberia is not merely a rich land: it is a fine place for comfortable, modern living. It cannot be measured by the yardstick of previously settled, densely populated territories. It is a land in the making. By its nature and resources it is a splendid arena for bold experiments, capable of providing tangible economic results and valuable social experience on how to effectively draw vergin territory into the tempestuous current of life on a high modern technical and cultural level. And to promote the best development of the productive forces of Siberia and the Soviet Far East the Novosibirsk Branch of the Academy of Sciences of the USSR has been set up.

Among the scientists who then came to Novosibirsk there was only one member of the *Znaniye* society—Academician A. A. Trofimuk. One can well imagine how busy the eminent scientist was, especially at a time when the Branch was just being organized. Nevertheless, as soon as he arrived he informed the local *Znaniye* society that he was ready and eager to fulfil its assignments in popularizing science. Today A. A. Trofimuk is head of the Novosibirsk Regional Society and, thanks primarily to his efforts and example, the membership of the society of the Siberian Branch of the Academy of Sciences of the USSR has grown to 700.

The Division's scientists often meet with the personnel of factories, mills, institutions and other organizations. These meetings are, as a rule, highly productive. For example, Academician M. Lavrentyev, the division's President, had a meeting with the personnel of the local river transport service. As a result, the beds of some rivers which had hitherto been unnavigable were cleared by the use of new blasting methods worked out by him. Such examples of the work of this and other organizations of the *Znaniye* society can be cited at great length.

In turn, the scientists benefit from their intelligent and responsive audiences. For one thing, they get valuable suggestions from specialists in production. Also highly gratifying to the scientists are the opportunities they get to present the results of their research and development work to those directly interested in them—the producers of material values.

An interesting case from his own experience has been related by the Chairman of the Ukrainian *Znaniye* society, F. D. Ovcharenko, Member of the Academy of Sciences of the Ukrainian Republic. A local newspaper carried an article about a new bio-mineral fertilizer developed in his laboratory. It evoked wide interest among agronomists, chairmen of collective farms, and farmers. The Academician and his co-workers visited several collective farms in five regions of the Republic, told big audiences about the results of their research, showed films, and together with the farmers tried out their fertilizer in field experiments. The walls of the laboratory expanded, as it were, and the new fertilizer gained wide popularity through the efforts of countless agronomists, collective-farm chairmen and farmers. This is a graphic example of how a scientific idea when popularized becomes a powerful material force.

Popularization makes the scientists, too, think along new

lines, find new relationships between phenomena and view their problems in wider scope.

The broad mass of readers and listeners is becoming increasingly better educated and exacting. Searching questions, arguments and remarks stimulate discussions and frequently draw the whole audience into the creative process. Thus the propagation of science is not only a powerful lever for advancing the culture and knowledge of the working people; it is increasingly becoming an effective means of developing science itself.

The object of the *Znaniye* society is to facilitate constant contacts between scientists and the people, to create conditions for the fruitful participation of scientists in the work of popularizing science. Much depends here on efficient organization. Lately, for example, national scientific congresses, conferences, symposiums have been held not only in Moscow or Leningrad, but in many different towns all over the country. More often than not it has happened that eminent scientists gather in some town for, say, a symposium, discuss their problems among themselves and go away without making a public appearance. The people of the host town would be disappointed: here eminent scientists came to their town and they, the people, could neither hear at first hand what the scientists were working on, nor see them on television. The scientists, however, were not to blame. Simply, there was no organization to arrange all this. No scientist can be expected to go around in a strange town looking for an audience to address. He simply hasn't got the time nor the facilities. It is *Znaniye's* job to bring scientists to eager audiences, to arrange their public appearance.

Now this is done in a very simple manner. The society's head-office is informed in advance by the Academy of Sciences or by the voluntary scientific societies of all scheduled scientific congresses, when and where they are to be held and who is to attend them. Upon receiving these notices the society's scientific methodological councils, also in advance, make arrangements with the respective scientists about their public appearances, while the local branches of the society organize meetings on the spot. Here is an example. A National Congress on Roentgenology and Radiology was held in Tashkent from October 28 to November 3, 1964. Understandably enough, there is wide interest in the achievements of this branch of science, especially since cancer is practically the only still unconquered disease in the Soviet Union and great hopes in fighting it are pinned on radiology. Talks by five academicians, thirty doctors of science and professors, and fifteen candidates of science in towns and villages of Uzbekistan drew huge audiences. Ten participants in the Congress appeared on local television, eleven spoke over the radio, and seven wrote popular articles in the local newspapers. The society received thanks from the local people as well as from the scientists who derived great satisfaction from their popularization work and appearance before interesting audiences.

The same thing happened during physics symposium in Armenia, a conference of chemical scientists in Kazakhstan, and other meetings of eminent scientists who simultaneously with discussing their professional problems found time to popularize these problems among the general public.

Besides their vast educational value, such contacts between large scientific bodies and masses of listeners, readers and TV viewers enhance the prestige of the scientists.

Twelve Days of One Year

It is hard to name a burning issue in public life, science, technology, production, literature and art that is not dealt with in lectures organized by the *Znaniye* society. In this respect the organization can by right be called truly universal and encyclopaedic. Its chief task is to satisfy the Soviet people's interests in any field of knowledge—natural or social sciences, technology, literature or art.

Practically speaking, about 60 per cent of the lectures are devoted to the humanities and 40 per cent, to sciences and technology. At times there is a demand to increase the ratio of lectures pertaining to natural sciences. But this is not something that can come about artificially. What is more, it would hardly be a good thing.

We should not ignore the fact that with the turbulent growth and spectacular achievements of natural sciences and technology the interest in social sciences has dropped to a certain extent. Atomic power, cybernetics, space flights—all this is so spectacular it is bound to be in the limelight. But then the humanities deal with human beings and with society. Should technical problems be allowed to dwarf the significance of human problems?

The trouble is that in the recent past spectacular achievements in the science and technology have eclipsed the humanities. At one

particular period, the development of the humanities in the Soviet Union was slowed down by subjectivism, by transient time-serving considerations which weaken the very essence of any science—the objectivity of research.

The youth, craving knowledge in the fields of sociology, ethics and aesthetics, often acquired subjectivistic views and one-sided interpretations instead of learning the objective dialectics of phenomena and regularities. All this has to be rectified in the process of popularizing knowledge.

It is noteworthy that such wishes are expressed mostly by those concerned with natural sciences. Here is what Academician A. D. Alexandrov has to say, for example:

"Recalling my school years I, a mathematician, think first of all about literature and history. Our teacher directed us and gave us food for independent thought. History was taught in excerpts at the time, but both my teachers were cultured people who could combine social science with life. In the *Communist Manifesto*, for instance, the teacher disclosed not only the profundity of thought but also the artistic grandeur of the style. Since then I have always looked on the introduction to the *Manifesto* as thrilling poetry..."

It is hard to add anything to these inspired words of a scientist, words that are a paean to social sciences. But it is essential to stress that when we talk about the humanities we mean not only the problems of the Soviet people proper, their history and life, but the whole complex of international problems. And it will take many lectures to satisfy the eager interest in what is happening to the peoples of Africa—the continent emerging from the flames of struggle to a real life. How close is their destiny with that of Soviet people born in the country cleansed by the flames of the Great October Revolution. There is an intense eagerness to know everything: just how the builder of a sovereign African country feels, the righteous wrath of a fighter for Angola's national liberation, the West's colonial policy, the timeless value of a bronze mask from Benin, Nigeria, pictures by painters of the Poto-Poto school (Brazzaville) and Swahili folk tales. They must know the reason why Soviet people are working in Egypt and Ghana, Guinea and Tansania, Ethiopia and the Sudan, Kenya or Uganda. Isn't it exciting to imagine oneself in the boots of those uttering the first Russian words in front of Africans who come to study in the Soviet Union or those who are mastering the language of a big or small tribe on the hot continent? The Soviet people believe that the purifying storms of fighting Africa will sweep away all the barriers in the way to

the freedom of its peoples, and they are profoundly concerned with the destiny of each country in that continent which is both so near and so far away. But this is only one continent. And man—if he is worthy of the name—is concerned with everything taking place on our planet, and no less so, frankly speaking, than with what is taking place beyond the earth's gravitational field. That is why—without belittling the significance of the natural sciences, of course—it is necessary to evoke, encourage and develop the interest in the social sciences as well.

In popularizing the natural sciences and the humanities, the *Znaniye* society feels the No. 1 task is to strengthen and develop interest in the social sciences by improving the methods of popularization. The lecturers are expected to present the material in a vivid manner, and to provide food for independent thinking and to lead their listeners to the necessary conclusions without imposing these conclusions on them.

To get a good idea of the range and content of the society's work, let us see what is envolved in 12 days of work of its Central Lecturing Bureau. We have chosen 12 days in December, 1964:

December 15th. In one of the auditoriums Lecturer's Day was held. On such days the society's lecturers can hear talks by scientists, get advice or attend a concert.

In another auditorium, teachers addressed an audience on child upbringing in the family and on parent-children relationships.

December 16th. In the Grand Auditorium, a seminar for Moscow factory workers on improving the quality, increasing the reliability and lengthening the service life of industrial goods was held in the afternoon.

In the evening there took place the sixteenth talk in the centre's *Topical Problems* series. Academicians V. A. Engelhardt and I. L. Knunyants, Doctor of Biology G. P. Georgiyev and Candidate of Biology A. A. Prokofyeva-Belgovskaya spoke on modern problems of molecular biology.

In another auditorium, K. S. Yegorov, research worker of the Pushkin Fine Arts Museum gave a talk on Vienna museums of the history of art in the *World's Greatest Art Museums* series.

December 17th. In the Grand Auditorium, Professor P. N. Yurenev, gave a lecture on Sergei Eisenstein's creative work in the *World Cinema Masters* series, and the film *Sergei Eisenstein* was shown.

In another auditorium Doctor of Philology V. V. Ivanova spoke on African literature in the *Contemporary Foreign Literature* series.

In one hall a concert was given by artists from the Tatar and Bashkir Autonomous Republics.

December 18th. A class of the Marxism-Leninism University heard a lecture by Professor K. V. Moroz on basic laws of materialist dialectics. Questions on philosophy were answered.

December 19th. In the afternoon, physics lessons were given for college preparatory classes.

In the evening a lecture-concert took place on songs by the Soviet composer Mark Fradkin, in the centre's *Musical Saturday* programme.

December 20th. In the afternoon, lectures were given at college preparatory classes.

In the evening, a *World Poetry* programme in the *Sunday Literary Evenings* series was held in one auditorium while in another an illustrated talk in the *Through the Countries of the World* series was given and a film *Thirty Days in Africa* was shown.

December 22nd. A discussion was held in the series *Philosophical and Natural-Science Problems in Medicine.* Devoted to the results of the Third National Conference on the Application of Radioelectronics in Biology and Medicine, the meeting heard V. V. Parin, Member of the USSR Academy of Medical Sciences; E. B. Babsky, Member of the Ukrainian Academy of Sciences; I. T. Akulinichev, M. D.; M. L. Bykhovsky, D. Sc. (Tech.); and E. I. Yelpiner, D. Sc. (Biology).

In another auditorium, the results of the Fourth International Cybernetics Congress, held at Namure, Belgium, were reported on by B. V. Gnedenko, Member of the Ukrainian Academy of Sciences; I. Y. Aksyonov, M. Sc. (Tech.); and B. V. Volter, M. Sc. (Tech.).

In the Conference Hall, a lecture on problems of proportionate economic development, in the series *Aid to Economic Executives,* was given by Corresponding Member of the USSR Academy of Sciences A. N. Yefimov.

December 23rd. In the afternoon, Y. B. Shor, D. Sc. (Tech.), gave a lecture on statistical control of dependability of non-restorable goods at the seminar on improving the quality, increasing the dependability and lengthening the service life of industrial goods.

In the evening a lecture took place in the series *New Methods of Teaching Foreign Languages.* Associate Professor L. A. Bliznichenko, of Kiev, spoke on hypnopaedia in teaching languages.

In another auditorium, a meeting was held on the results of the recent session of the USSR Supreme Soviet which adopted new laws to improve the public welfare. It was addressed by K. P. Morozov and Hero of Socialist Labour G. I. Lamochkin, USSR Supreme Soviet deputies; B. M. Sukharevsky, Vice-Chairman of the USSR State Committee for Labour and Wages; I. D. Zlobin, D. Sc. (Econ.); N. M. Budakov, director of a household refrigerator factory in Moscow; and R. D. Vinokur, M. Sc. (Econ.).

In the Small Auditorium, a lecture in the series *Basic Problems of Gas Chromotography* was given by S. V. Vagin, M. Sc. (Chem.).

In *Our Children's Health* series, Professor Z. I. Kolyarova gave a talk on child's organism and his environment.

In the Conference Hall, a lecture on Russian explorers of Siberia and the Far East in the series *New Findings by Soviet Historians* was read by Master of History V. S. Myasnikov.

December 24th. Professor V. I. Svidersky of Leningrad, gave a lecture on problems of the finite and infinite, in the *Philosophical Problems of Modern Science* series.

A large audience heard M. I. Chulaki, Executive and Art Director of the Bolshoi Theatre, and A. I. Orfenov, head of its opera company, speak about the company's guest performances at *La Scala.* The meeting concluded with a concert by the Bolshoi's soloists.

In the Small Auditorium, Corresponding Member of the USSR Academy of Sciences V. I. Siforov spoke on the prospective development of radioelectronics.

December 26th. The traditional oral magazine *Youth Saturdays.*

December 27th. A recital of poems by the popular Soviet poet Robert Rozhdestvensky was given by Merited Artiste of the RSFSR Andrei Concharov (in the *Saturday Literary Evenings* series).

December 28th. APN Forum. The *Znaniye* society is one of the four sponsors of the Novosti Press Agency (APN), a public press agency which pursues the aim of promoting international peace and friendship by circulating information.

Once a month the Novosti Press Agency conducts at the lecture centre a spotlight programme on world affairs with the participation of its commentators, its permanent and roving correspondents, prominent Soviet and foreign personalities, writers and art workers. Major problems of Soviet home and foreign policy and important world events are discussed; journalists give their impressions of trips to foreign countries.

This time, after introductory remarks by chairman Karl Nepomnyashchy, member of the APN Board, APN political commentator Spartak Beglov recounted his meetings in Japan, APN executive secretary Boris Pishchik told about his trip to Rumania, roving correspondent Alexander Krasnov gave a survey of the situation in the Yemen, People's Artiste of the RSFSR Tatyana Ustinova, art director of the dancing group of the Pyatnitsky Ensemble spoke about the ensemble's foreign tours.

As always the talks were accompanied by the demonstration of slides, photographs and films.

These are ordinary twelve days at one of the *Znaniye* society's lecture centres.

As will be seen from the given titles, the subjects taken up at the main lecture centre are not picked haphazardly. There is an orderly succession of themes, a systematic arrangement of lectures in series.

Such lecture centres, often called Houses of Knowledge, function, in the capitals of the constituent Republics of the USSR, as well as in many other cities and district administrative seats throughout the country.

The society's facilities for the dissemination of knowledge also include the Polytechnical Museum and Polytechnical Library in Moscow, which are daily visited by thousands of people, Houses of Scientific and Technical Propaganda in Moscow, Leningrad and Kiev, which not only serve numerous visitors but through their publications maintain regular contacts with hundreds of industrial enterprises all over the country, an ever growing network of stationary and mobile planetariums, which help to satisfy the tremendous interest of the Soviet people in modern problems of astronomy and astronautics.

Nor does all this exhaust the *Znaniye* society's range of activities. There isn't a house of culture, trade union or rural club, library or cinema in which lectures of the society are not read. In many of these cultural institutions the society regularly conducts its work. They may well be regarded as its lecture centres. The number of these centres runs into 60,000.

Here, incidentally, lies one of the "secrets" of the wide scope of the society's activities. The Soviet Constitution not only proclaims the right of Soviet citizens to join public organizations, not only proclaims freedom of speech, freedom of the press, freedom of assembly and mass meetings, but ensures these rights and freedoms by placing at the citizens' disposal buildings for gatherings, paper for publications, and other material required to exercise these rights.

The vast network of lecture centres did not grow up all at once. When the society was first set up, its primary organizations were those in the regional centres. This could not adequately provide for the systematic dissemination of knowledge at factory or rural clubs. Yet it was there that this work was most wanted. In view of this, city and district branches of the society were formed. Soon, however, it became apparent that even that was insufficient to meet the ever growing quest for knowledge. Thus the idea was conceived to set up primary units of the society directly at factories, mills, offices, institutions, collective and state farms. Today there are almost 100,000 such organizations throughout the country. And they account for the bulk of the society's work.

Such a primary organization best knows the needs and interests of the people in whose midst it works. Accordingly, it plans and organizes its activities, arranges in advance who of its members, where, when and on what subject will deliver a lecture, and helps the lecturer to accumulate material for it.

The activities of the society's primary organizations are as manifold and multifarious as the interests of the modern Soviet citizen are many-sided. This can be illustrated by the example of the Pobeda Collective Farm, Kanev District, Krasnodar Territory. As many as 345 lectures and several thematic evenings and debates were held there in the space of one year. Indicative of the wide range of the collective farmers' interests are the subjects treated in the lectures. There were 39 lectures on agronomy, animal husbandry and chemicalization of agriculture, 25 on science and technology, 63 on history, 17 on philosophy, 7 on political economy, 30 on law, 43 on international affairs, 10 on literature and the arts, 34 on child upbringing at school and at home, 15 on medicine, 7 on astronomy and space exploration, 8 on military themes, etc.

This primary organization of the society has enlisted the whole of its village intelligentsia into the work of disseminating

knowledge. Its activities appreciably help to further the collective farm's successes.

Not everywhere, it is true, is the range of the dissemination of knowledge so wide. Here and there lectures on topical problems are not given.

Yet there is every possibility for fully satisfying the interests of the people in every village, let alone in town, on a no smaller scale than on the Pobeda Collective Farm. It has no more numerous intelligentsia than any other.

It may, of course, and does happen that in a given place there is no one capable of delivering a lecture on a certain subject. This, however, does not mean that the subject should be left unilluminated. A primary organization is not merely an amalgamation of local lecturers. As a unit of the all-Union society it can invite any lecturer from the outside.

The strength of the *Znaniye* society lies precisely in the fact that it functions as a single whole and can by mutual aid and exchanging lecturers well satisfy the cultural interests of its people.

The district organization in Shchors, of the Ukrainian *Znaniye* society, in response to requests from local collective farmers, decided to set up an agricultural two-year-course people's university with three departments—economics and organization of farm production, plant growing, and animal husbandry. The curricula were drawn up on the basis of answers to a questionnaire circulated among the farmers. As there were not enough local lecturers, the district branch applied for help to the Ukrainian Republican Society. It was soon informed that Kiev scientists had offered to deliver lectures on thirty subjects. On the first day lectures were given by F. D. Ovcharenko, Member of the Ukrainian Academy of Sciences and chairman of the Republic's *Znaniye* society Jan Kasper, Corresponding Member of the Czechoslovak Academy of Sciences; and Academician V. M. Kondratyuk. Later, lectures on various subjects were read by other prominent scientists.

One Is Not Born a Lecturer

Every day over 40,000 lecturers of the *Znaniye* society meet their audiences, who have very inquiring minds and are most demanding. And it is for the sake of these moments, in order that the meeting of the lecturer with his audience bring mutual satisfaction, that this society exists and keeps developing its work.

It seems superfluous to say that success in the dissemination of knowledge depends primarily on the staff of lecturers, that is, on the people who make up the membership of the society. The outstanding Russian teacher, K. D. Ushinsky, said that educational force emanates only from the living source of human personality. There are no statutes or programmes, no artificial structure of any institution, no matter how cleverly planned, which can replace personality in education.

The constant enlargement and improvement of the staff of lecturers constitutes concern No. I of all the organizations of this society. Its constitution provides that the primary organizations must not limit themselves merely to accepting those who have expressed the desire to join the society. They must also actively draw into the society those who have already manifested their ability to disseminate knowledge. Formerly it often happened that a person was an active lecturer and fulfilled the assignments of the society, but was not formally a member. In such cases there is no reason why the organization, on seeing the activity of the lecturer and appreciating his merits, cannot suggest to him that he join the society. And if it receives his consent it should arrange for his admission, and give him a membership ticket as recognition of the contribution which he is already making to the cause of disseminating knowledge. This will be a demonstration of attention to the person and also a mark of public appreciation of his work. Such an attitude towards people, while preserving the stability of the organization, helps create a comradely atmosphere, which excludes any display of red tape and formalism. A number of amendments to the society's constitution adopted at its 4th Congress are directed towards this end.

Much is required of the lecturer. First and foremost, of course, is thorough knowledge of his subject, but that is not all. It is equally important that he possess the ability of presenting the subject matter in an interesting manner, the gift of influencing his listeners. We might even say that such an ability is the most important factor in the lecturer's skill. It is most important because a lecture on any subject fully achieves its purpose when it not only imparts a certain amount of information, but also serves the cause of communist education.

And so we find that in addition to knowledge the lecturer must have certain other important qualities. The first of these is love for his work, respect for his listeners, the ardent desire to impart

his knowledge to them, the ability of firing his audience. Then, he must have moral prestige, profound personal convictions, a high level of general culture and intelligence.

It was Lenin's behest that we train as many people as possible for whom we can vouch thay they will never accept a word on trust, will never say a word against their conscience, people who will not fear to admit a difficulty and will not fear to struggle in order to achieve the goal they have seriously set themselves. The effectiveness of the popularization of knowledge is determined by the extent to which it helps the working people objectively to analyze all the events and phenomena of life from the positions of a scientific world outlook and to draw correct, realistic conclusions. He who mounts the rostrum should be able to interpret the things going on about him, which, at times, are most complex and contradictory.

Much naturally depends on the lecturer's ability but it would be wrong to think that lecturers should be chosen on the basis of exceptional ability. This is impossible when it comes to training hundreds of thousands of lecturers. The society gives careful consideration to the lecturer's individual ability, but what is most important, it carries on a constant, careful training of lecturers. Attention is paid to enhancing the prestige of the lecturers and the importance of their work.

The fact that there are tremendous numbers of well-trained specialists of all professions who are ready selflessly to serve their people, creates all the conditions necessary for having as many qualified lecturers as necessary for the broadest possible popularization of knowledge. The purpose of the society is to unite all these specialists and constatly help them in improving their skill in lecturing, in popularizing; it must organize the work in such a way as to enable lecturers to speak before the broad public as often as possible in order to pass on their knowledge.

Organizational work is of great importance in achieving this purpose. The boards of the all-Union and Republic societies, their presidiums and the local organizations are not merely administrative bodies, but primarily methodical, organizational bodies. They have to study the trend, content, forms and methods of the popularization of knowledge, they must generalize experience, draw up recommendations which will later be put into concrete form at the methodical councils and sections, the societies of lecturers on different branches of knowledge.

The collective work in an organization that is based on the principles of democratic centralism must in no way efface the individuality of lecturers or hamper their freedom of creative activity. On the contrary, collective work helps the individuality to develop, it creates conditions for competition. As Lenin noted, there is nothing in common between democratic, socialist centralism and standardization and the establishment of uniformity from above. Diversity in details and methods ensures unity in what is most important, in what is fundamental and essential; it does not destroy these qualities. The greater the diversity, the better and richer the general experience. In this respect diversity is a guarantee of success in the attainment of a single common goal.

In a large collective of people lecturers are always able to go into the laboratory of their most popular colleagues. That is how the methods of popularizing knowledge—that very complex art—are polished and perfected. Under conditions of real collectivity popularization of science acquires a purposeful character, one that meets the demands of a human society in which the free, harmonious development of the personality of each is a condition for the free development of all.

In order to be able to satisfy the present-day demands, even the experienced lecturer needs constant methodical aid. And the lecturer who works on a voluntary basis has even more right to expect a most attentive, thoughtful attitude towards himself. It is the special, constant concern of all organizations of the *Znaniye* society to render such aid.

Listening to and reviewing lectures help to improve their content and to raise their scientific level. Of special value are general reviews concerning either a series of lectures on some particular field of knowledge or different lectures on a single problem. This type of review, based on concrete examples and supplied with methodical advice, is a great help to the lecturer.

When considering all these forms of methodical work with the lecturers, one must have in mind friendly, thoughtful, attentive aid. Collective creative work requires not only mutual responsibility, but also a feeling of mutual sympathy among the members of the collective, well-disposed trust, the recognition of real equality, which does not depend on one's knowledge or position. It is this spirit that permeates the constitution of the society, from beginning to end.

Of course, in real collective work the members of an organization cannot hide from one another their ideas and material, or even their critical comments on current results. This is both natural and necessary because in the same way as the organization is responsible for each of its members, each member of the so-

ciety is responsible for his organization. Collective criticism guarantees the trustworthiness of the information which issues from the society and its lecturers. And that is understandable. It is because scientific achievements and conclusions are so important that people are so deeply interested in lecturers giving authentic information and not drawing hasty unfounded conclusions.

The district, regional, Republic and all-Union seminars help to improve the lecturers' ability. At these seminars lecturers receive up-to-the-minute information and expert advice on methods. It has become a fine tradition for eminent scientists and the heads and leading specialists of institutes and ministries to take an active part in the work of seminars and in preparing methodical manuals. This is very gratifying. When the active scientist comes to his listeners he not only brings them facts and conclusions, but also takes them into his laboratory, revealing to them the world of scientific quest. It is very important to pass on to wide circles of lecturers this approach of a scientist towards the presentation of a problem. After all, the lecturer can get the factual data in the literature, and magazines. But to fire the audience with enthusiasm, to make listeners fully conscious of contemporary progress in science is something which is best achieved through direct contact with the makers of science.

The board of the All-Union *Znaniye* Society publishes special literature to assist lecturers. In 1964 alone it put out some 700,000 copies (excluding the publications of the societies in the different Republics and their local organizations). The purpose of this literature is to systematize the methodical advice and to supply lecturers with reference material that will help them make their lectures convincing and clear. These manuals provide valuable bibliographical material and contain concrete recommendation on the use of visual aids, popular science films and lantern slides. Nevertheless there is still not enough good literature on the art of popularizing knowledge—something which provokes just criticism. It must be hoped that this deficiency will be overcome. The society is drawing the best lecturers and specialists in methods into writing works on the art of disseminating knowledge.

Lecturers are highly appreciative of methodical assistance. The methodical centres that have been organized in recent years on a voluntary basis in the Republics, regions, cities, and districts and at many enterprises and collective farms are doing work which, without doubt, is of primary significance. They are becoming permanent centres of systematic aid to lecturers. In the Ukraine, where the scientific-methodical centres originated, there is now a large

group of activists—about 10,000 specialists who work on a voluntary basis.

For the benefit of lecturers the methodical centres collect and systematize methodical and reference literature, perodicals, reviews and summaries, and stenographic records of lectures, as well as material to assist in organizing discussions on various subjects, "oral magazines," question and answer" evenings, and theoretical and production conferences.

Consultations given by outstanding scientists and specialists at the methodical centres arouse great interest among lecturers. Tape recordings are also used. For instance, the scientific-methodical centre of the society in Kharkov collected and systematized questions on astronomy and the conquest of space, and sent them to the eminent astronomer N. P. Barabashov, a member of the International Astronomic Union's Committee on Planets and Satellites. His answers were recorded and the tape sent to the district centres. Thus the astronomer's voice was brought to all the lecturers in even the most distant parts of the region. Many of the districts had never before had the opportunity of hearing Professor Barabashov speak.

Of particular importance in methodical work is the assistance the society gives lecturers through its primary organizations at research institutes and other scientific establishments. The following example shows how this is carried out.

In April, 1965, the Presidium of the Board of the All-Union *Znaniye* Society discussed and approved the work of the primary organization at the I. V. Kurchatov Institute of Atomic Energy. The value of this work lies not only in the fact that the members of the institute staff regularly give lectures. What is even more important is that the primary organization, which possesses unusual opportunities, is making an important contribution to the perfection of mass-scale propaganda in a field of knowledge that is very interesting and exceedingly complicated. It is not a simple matter to convey to a large audience the intricate problems of thermonuclear reaction, a world in which a person without special preparation feels as lost as a traveller in an absolutely unfamiliar country. In order to make these problems understandable it is not enough for the lecturer to have a well thought out method of presenting the scientific information—he must illustrate his lectures with carefully prepared visual aids. A lecture loses much of its value if effective visual aids are not provided for those points which require demonstration. The institute's primary organization decided to prepare several lectures on complicated questions of nuc-

lear physics and atomic technology fully illustrated with coordinated demonstration material.

The Presidium of the All-Union *Znaniye* Society supported the initiative of the primary organization in rendering effective help to the lecturers who were to speak on the subjects *Present-Day Problems in Nuclear Physics* and *Power Engineering of the Future*, and the like. The institute's material on illustrated lectures has been made available to organizations throughout the country since the society's publishing house and its experimental factory for visual aids and demonstration apparatus were given the assignment of multiplying specimen made, in order to satisfy all requests. The Kurchatov Institute is not an exception in this respect. Other scientific and research institutions are doing similar work, the results of which are later used on an all-Union scale.

The art of lecturing, as we know, cannot be acquired in a day, a month, or even a year. It is therefore urgent that the question be raised of developing in children, when they are still at school, the art of speaking before a large audience. The school, the Young Pioneers' Organization, the Young Communist League, by making wide use of such active forms of educational work as discussions and debates, will train the youth to present their ideas logically and convincingly.

At higher educational institutions the development in students of the art of popularizing knowledge is considered an integral part of the educational process. This is understandable, since the specialists being trained today will tomorrow be disseminators of knowledge. At these institutions conditions are most favourable for students, while acquiring knowledge, also to acquire skill in conveying knowledge to others, in other words, to master the art of lecturing. Here they can avail themselves of the assistance of experienced lecturers: professors, teachers and post-graduates.

On the initiative of the *Znaniye* society many institutions of higher learning have introduced optional courses in the art of lecturing. In other cases the training of lecturers from among the students is effected by the society's primary organizations. This work is well organized at the Sverdlovsk Pedagogical Institute. At the Novosibirsk Institute for Engineers in Geodesy, Aerial Photography and Cartography over a third of the students of such departments as philosophy, history, radio-engineering, higher mathematics, astronomy, and artificial earth satellites are mastering the lecturer's art.

After summarizing the accumulated experience, the USSR Ministry of Higher and Secondary Specialized Education and the

Presidium of the Board of the All-Union *Znaniye* Society elaborated joint measures and sent to the heads of all higher educational establishments and the society's local organizations detailed recommendations for improvement in the training of lecturers.

These measures will pave new ways for the effective solution of the important problem of training lecturers on an even greater scale.

Knowledge Bears Fruit

Popularization of scientific knowledge is a complex process requiring great effort on the part of both the popularizer who must intelligently, authentically and persuasively explain difficult problems, and the listeners or readers who must try to comprehend the meaning and significance of phenomena and events which affect their own lives and the life of society.

That is why success is achieved not only by constantly improving the contents of lectures, but also by unflaggingly perfecting the forms of disseminating knowledge.

Modern science consists of a multitude of fields. People want to know, in some measure or another, about the latest achievements in all fields of science, technology, production and culture. How are such wide interests to be satisfied?

Naturally enough, the urgent problems of broad interest should be carefully selected first of all. Even then the task is still highly complex. For one and the same subject cannot be equally expounded to collective farmers and students, soldiers and housewives, elderly and young people, religious persons and atheists, at factories and neighbourhood meetings. Only diversified presentation makes popularization of science flexible, with due consideration of the audience's special and general education and the prevailing specific conditions.

In its early period the society conveyed knowledge solely through lectures. These remain the principal media even today. For whatever new facilities for spreading scientific information are developed, nothing can take the place of a live talk by a lecturer, his direct contact with his audience. A well-prepared and attractively presented lecture stirs people to self-education, stimulates their interest in other means of information, particularly books.

It is by no means fortuitous, therefore, that with the tremendous expansion of the press, radio, cinema and television the interest in good lectures is constantly growing. Suffice it to say that the *Znaniye* society now gives daily 165 times as many lectures as it did in 1948, and 12 times as many as in 1954. This may seem strange, but only at first sight. Though technical facilities have certainly widened the range of lectures which can now reach vast audiences, say, by radio or television, the microphone and camera deprive the lecturer of direct contact with his listeners. On the one hand, he cannot see how his ideas, arguments and points are brought home; on the other hand, the listeners cannot ask questions and get answers. That is why frequently after hearing a lecture on radio or television people go to hear a live lecture on the same subject, where they can see the lecturer and talk to him.

This by no means negates the merits of radio and television in popularizing knowledge. We shall return later to these facilities and see how they are used for this purpose. But first let us speak about the incomparable advantages of a live lecture.

It continues to be the principal, though no longer the only, form of popularizing science. There are now other effective forms, which have stood the test of time: scientific consultations, question-and-answer sessions, conferences on theoretical, production or economic problems, meetings with advanced workers, innovators, scientists, artists, with participants in the revolutionary events, with heroes of the Civil War and the Second World War, clubs of interesting meetings, oral magazines.

New forms do not arise by themselves. They are brought into being because they are needed. Many of them reflect, among other things, a striving to make the propagation of knowledge more effective.

Znaniye society was set up as a scientific organization to spread learning among the people. As it accumulated experience it increasingly demonstrated its power to promote social advancement. By popularizing knowledge it broadens the horizons of the working people, helps them to develop communist consciousness, raises their skills and increases labour productivity. In this it is guided by Lenin's behest that "we must get the people really to imbibe our propaganda, our guidance, our pamphlets, so that the results may bring an economic improvement."

Accordingly, the last congress of the society reworded its aims and purposes and laid down in its constitution that popularization of knowledge must be closely linked with life.

Under the new constitution a member of the society is not only obliged to popularize knowledge but also "to facilitate the application of scientific and technological achievements and advanced know-how in production." This important amendment to the constitution confirms what is already being done by many lecturers who act as devoted champions of new and progressive developments, as organizers of their application in production. The motto of the society's popularizers is "knowledge must bear fruit."

This may be illustrated by the work of one of the society's lecturers E. A. Samolyotov. "When I saw how effective herbicides were in weeding crops," he tells, "I procured literature on the subject, learned how they should be applied, and then widely introduced them on our farm. As it occasionally happens, ignorance made some of our people sceptical of the innovation. So I popularized it extensively in talks at meetings of our farmers, at production conferences, and in articles in the local newspapers.

"Soon everybody was convinced. Now most crops in our district are treated with herbicides. Local inventors designed an easy-to-make sprayer which is now used by all our collective farms."

There are numerous examples of working people who have acquired useful knowledge immediately applying it in their daily work. The Rezekne State Farm in Latvia was short of mineral fertilizer applicator. It would seem that until it got a sufficient supply of these machines there was nothing to do but apply the fertilizer by hand. Then a discussion following one lecture gave the farm's machine shop manager the idea of adapting available seed drills for laying fertilizer. This eliminated manual labour, improved fertilizer application, increased per-worker output more than fivefold, and appreciably reduced costs. Thus the acquisition of knowledge awakens a creative initiative in people, opens the road to conscious creative endeavour. This is a graphic example of how knowledge makes a person bolder and more efficient in his job.

Today, the solution of economic problems and problems of efficient management is acquiring increasing importance for the building of communism. Production conferences are a major instrument here.

Their effectiveness may be illustrated by the following example. A team of scientists or other specialists go to a factory or farm, examine its state of affairs and make appropriate recommendations. These they present not only to the management but

to a meeting of the entire personnel. In this way the workers or farmers acquire comprehensive knowledge and, what is particularly important, not just abstract knowledge, but knowledge based on a concrete analysis of conditions at their own enterprise, their latent reserves and the ways of utilizing them. The people make decisions, and check on their implementation.

At the beginning the *Znaniye* society drew its speakers mainly from among the intelligentsia. But as time went by it found that the people's academy for millions can fruitfully enlist people even without a scientific degree or college diploma but with rich experience of life and work.

Today many advanced workers go on the society's behalf to factories or farms not only in their own town and district, but even to other regions and Republics.

An innovator lathe operator at a steel rolling plant in Leningrad, M. A. Zaitsev, recently went to Gomel, administrative centre of one of the seven regions of Byelorussia, to give demonstration lectures at factories in that city.

Why should a worker from Leningrad go to impart his know-how to workers all the way out in Byelorussia? This random fact, like countless others, is a manifestation of the spirit of mutual aid inherent in socialism. Leningrad is the second largest industrial centre and a hub of technological progress in the Soviet Union. Byelorussia's industry is young. In Gomel, a match factory employing 400 workers was one of the biggest industrial enterprises prior to the October Revolution. Today the city boasts a machine-tool plant, an electrical engineering works, a peat-digging equipment factory, a farm machinery plant, a railway waggon repair works and many other big industrial enterprises. Gomel, like many other Byelorussian towns and villages, was almost completely destroyed by the nazis in the last war. It is therefore quite understandable that Leningrad know-how is extremely valuable to Gomel workers.

As regards Leningrad workers, it is a tradition with them to convey their experience to others. After the October Revolution, Leningrad-made machines and equipment went primarily to the then backward regions of the country, including Byelorussia, helping with their industrialization. And thousands of highly-skilled workers and engineers imparted their knowledge to the personnel of the new industrial regions of the USSR. The tradition is kept up. The Leningrad lathe operator came to Gomel to share his knowledge and experience with his fellow workers. He demonstrated a labour-saving attachment for a lathe of his own invention,

which evoked tremendous interest. Gomel specialists and workers found the device highly effective and quickly applied it in their own factories. This yielded a great saving of production costs.

I. R. Medvedeva, a dairymaid at the Bolshevik Collective Farm, in the Kursk Region, and deputy of the Supreme Soviet of the RSFSR, is an active member of the *Znaniye* society and does much to spread her know-how. For instance, a neighbouring collective farm, which, though its cows and fodder were much the same as those on Medvedeva's farm, had much lower yields and a low fat content of its milk. Medvedeva went there and for several days demonstrated how her method can be effectively applied at their collective farm. Soon the farm's per-cow daily milk yields grew by three litres.

Advanced methods of production are taught by workers themselves who conduct special classes right on the job. This is a new but already widespread practice. How such classes function and the results they yield may be shown by this example. Hero of Socialist Labour Abdusattar Gafarov, a team leader on a cotton farm in the Khodjent District, Tajik SSR, has developed new efficient methods of cultivating cotton. The local *Znaniye* society organized a class for him to pass on his experience. Directly in the fields he gave instruction on the most efficient use of machines and the proper application of fertilizers. Upon their return home his pupils applied the acquired knowledge at their own collective farms. Previously far behind in cotton production, the district has now come to the forefront. This is largely due to the good organization of teaching advanced know-how.

More and more scientists and leading workers collaborate in propagating advanced know-how. This frequently takes the form of joint talks to workers or collective farmers with the scientists summing up the discussion and explaining its scientific basis. In this way the scientist comes into closer contact with the concrete needs and interests of those for whom he, strictly speaking, works; while the production worker rises from his naturally practical outlook to a generalized comprehension of his experience on the basis of the latest scientific developments in his field.

In imparting know-how it is highly essential to relate it to the specific conditions in which it is to be applied.

Thus Azerbaijan, one of the fifteen constituent Republics of the USSR, is small in size, but its territory is cut by ten of the world's eleven climatic zones, and has nearly all the soil types

prevalent in the Soviet Union. Crops are grown here on land lying in a range from 26 metres below to 2,000 metres above sea-level. Here, therefore, lectures on farm production, for instance, have to be differentiated according to the different zones.

So, too, the methodical aids to lecturers must be differentiated for agricultural know-how to suit the given conditions of production in the respective zones, collective farms and state farms.

This line is ever more consistently pursued by the *Znaniye* society's local organizations. In the Ukraine, for example, in preparation for the 1965 spring field work, a series of seminars was held for lecturers on agricultural topics. This time the seminars were held not on an all-Ukraine, but zonal basis, with the seminars in Lvov, held for the Republic's western regions; in Poltava, for its predominantly steppe zone; and in Zhitomir, for its predominantly forest zone.

The fact that popularization of knowledge directly and immediately tells on production, does not imply that it is the only effective bond between science and practice. These bonds are numerous and varied and many of them are very complex.

It would be unreasonable to demand that all research results should be put to practical use immediately. The social function of science and its purpose, in the final count, is the perfection of production, the creation of the optimum conditions of man's life. But the thesis of the direct interaction between science and practical work as the motive force of science and production is correct only in those cases where the appropriate departments of science and industrial branches already exist. Then the interaction between science and the respective industry is the basis for further progress of these two spheres of human endeavour.

When it comes to entirely new production based on entirely new discoveries, this is possible solely on the basis of research into the laws of nature, that is the development of science according to the laws of its own inner logic. Purely theoretical research is known to lead sometimes to practical results of colossal importance; free and seemingly "abstract" scientific investigation leads to a revolution in technology.

The unusual significance of the fundamental sciences in the cognition of the surrounding world, the mysteries of matter, the laws governing its movement, the role of these sciences as a basis for entirely new production, evokes the broadest interest on the part of the working masses who, rather than limit their range to

the sphere of current interests of their production, want to glance into scientific laboratories where the future of our world is in the making. D. I. Mendeleyev's words "the crops of learning available for the people to reap" are often true with regard to research trends which at first seemed very remote from practice. The faster science develops, the more widely people are acquainted with its methods, difficulties, searches, prospects and results, the more significant is its practical effect.

Nor is it merely a matter of immediate practical effect. As the Russian revolutionary democrat of the 19th century, N. G. Chernyshevsky, once said, "learning not only brings well-being and power to the people; it gives them incomparable delight."

Mental Appetite Stimulated

A new effective medium of popular education—people's universities—has sprung up in recent years and is widely developing.

In what measure do they differ from other forms of disseminating knowledge? People's universities are structurally modelled, to a certain extent, after regular state colleges: they conduct long-term courses to a fixed student body; give systematic instruction according comprehensive curricula; hold regular classes; the students do home work and are helped to assimilate their learning.

Thus, people's universities are unparalleled social educational establishments. A distinguishing feature of such universities is that on graduation the students do not expect to obtain a certificate providing formal advantages of any kind. Those who go there are impelled by the inner urge to get additional professional knowledge or familiarize themselves with fields of science and culture not connected with their work. The advantage and the appeal of the people's university lies in its complete voluntariness and self-administration. It is open to all irrespective of age or profession. No education certificates are required. There are no examinations during the course of studies – everyone studies for himself insofar as he finds the studies of use. Naturally, under these circumstances an educational establishment of this kind can function only on an autonomous basis. And this is actually the case. Beginning with compiling the programmes and throughout the study process the

work of the people's university is guided by the students themselves.

People's universities are popular because they serve man's intellectual requirements.

There is the town of Soroki in Moldavia. It is not much of a cultural centre—the town has only three trade schools, a teachers' school, a medical school, two secondary schools and no colleges. There is also a people's university in the town. Here are some eloquent figures: when it was established the university had an attendance of 100; towards the beginning of 1964-65, attendance rose to 852 and by the end of the same year, to more than 1,000—one-twentieth of the town's population.

What is the secret of the university's appeal? This question is best answered by the students themselves. M. L. Lebedeva, chairman of the trade union organization of a sewing factory, has been attending the university continuously since 1959; at first she studied at the faculty of literature and art and now is a student of the state and law faculty. "I remember the first lecture given by people's judge V. K. Mineyev," she says. "Since then I have been regularly attending all the lectures at that faculty. Gradually, I developed an interest in law. This is particularly important now that I have been elected chairman of the comradely court."

"Once I visited the Elektropribor plant where a comradely court was in session. The chairman and his assistants made certain errors and I was able to give them some practical tips. I could only do that because at the people's university I had thoroughly studied the experience of the best comradely courts of our city and appropriate legislation. And I was very pleased when the chairman of the comradely court from that plant also began to attend the university's law faculty.

"Now the workers of our plant have elected me chairman of the trade union organization. I still attend the university regularly—now it's the labour legislation department—and also study law books on my own. All this helps me to carry out another important assignment—I am a public investigator's assistant of the state procurator's office."

Such cases are by no means a rarity. No wonder the students often ask to have the term of studies at the people's universities extended.

For instance, students who took a two-year course at the Tallin culture university, suggested that circles of graphic art, music, etc., be organized to consolidate the knowledge acquired. The circles have been set up and are now functioning successfully. In the

city of Tartu, also in Estonia, the students of the graphic art faculty suggested that the curriculum be expanded, supplemented with practical classes and extended to a three-year course. Such requests are granted, as a rule.

And there are cases where studies, extended at the students' request, proceed along new lines. Back in 1960-61 an economics faculty was set up for economic executives of Kirov District, Tbilisi, at the local culture university. After two years of studies, 50 people graduated. Then, at the students' request, a faculty of literature and art was set up. And in 1964 a people's university of aesthetics was opened for party and management personnel of the district at the students' request. It is attended by 70 people, mostly graduates of the first two faculties. Thus, the people's universities are developing along with their students.

The growth of the people's universities testifies to their viability, appeal and growing popularity. In 1960, there were 2,120 people's universities in the country, chiefly for literature and art, and by 1965 the figure had soared to 16,000. The number of people's universities has increased almost eightfold in five years.

Whereas at the beginning most of the people's universities were devoted to literature and the arts, now a great many specialize in industrial, agricultural, educational, legal, or other fields of knowledge. Their total enrolment runs into 3,000,000, with factory workers and collective farmers making up half this number and, what is particularly interesting, women comprising more than half.

And here is another noteworthy fact: people's universities started out mainly in the cities. And now more than half of them are functioning in the countryside. Villagers make up 42 percent of those attending people's universities. This is due to the great efforts of the village intelligentsia and the much greater help given the countryside by the town.

The *Znaniye* society gives curricula, methodical direction and aid to all people's universities. The society's methodical councils with the participation of leading scientists, have drawn up and issued forty model curricula and syllabuses for people's universities, on the basis of which each university draws up its own, suiting its specific needs.

Tentative study plans and programmes drawn up at the centre are not necessarily the final word. Their purpose is to determine the volume and system of knowledge given at universities of various specializations, to ascertain teaching methods, offer certain methodological recommendations with regard to organizing the

education process and bibliographic instructions. Thus, they are only a basis for the elaboration, in each particular case, of concrete plans and programmes with an eye to local conditions, the composition and wishes of the audience. This practice of drawing up concrete local plans on the basis of the tentative plans elaborated at the centre has justified itself and now it is only a matter of continually improving on it.

Instruction at people's universities is given by some 120,000 lecturers, including scientists, teachers, doctors, engineers, agronomists, writers, artists, musicians, architects, and others. Very often they do not just deliver an occasional lecture, but conduct seminars and theoretical conferences, systematically direct the work of students.

Associate Professor L. A. Linev, head of the Chair of Literature at the Grodno Pedagogical Institute, says: "In Grodno and Shuchin the lecture halls of the people's universities have in recent years become to me another permanent rostrum. My students here, people of different ages and occupations, are united by an ardent desire to acquire deep and solid knowledge of literature, art, aesthetics, and apply it in their practical work of building communism. It is a great pleasure to teach them. To meet their multifarious interests I've had to look up fresh material for my lectures on artistic tastes, on real and false beauty, on the creative paths of Russian classical writers, and on other subjects. But this work gives me real pleasure and joy."

People's universities are by no means uniform institutions. Thus, for example, the universities of law do not all follow the same or nearly the same curriculum. Different universities or their departments cater to different groups of people, such as deputies of local Soviets, people's assessors (members of law courts), members of voluntary public order squads, members of comradely courts, public controllers, etc., equipping them with legal knowledge essential for performing their functions.

During the past six years the University of Law and Socialist Construction of the Latvian Republic has provided instruction for more than 5,000 members of voluntary public order squads, more than 3,000 chairmen and members of comradely courts and over 1,000 deputies and volunteer workers of local Soviets. This university has also trained 105 volunteer prosecutor's assistants. The majority of universities of health graduates become volunteer health education workers. Thus, 89 graduates of branch No. 2 of the Rigas Angerbs Firm actively help medical workers, participate

in health protection inspections, and act as volunteer inspectors on school, house or factory health commissions. This is not only true of Latvia. The same can be said of any other Republic or region.

The first all-Union review of people's universities was an important landmark in developing voluntary media for the dissemination of knowledge. It was conducted during the 1964-65 school year on the initiative of the *Znaniye* society, the All-Union Council of Trade Unions, the USSR Ministry of Higher and Secondary Specialized Education, the USSR Ministry of Culture and the YCL Central Committee. More than 20 government and public organizations also helped prepare for this review. Commissions were organized throughout the country. Tens of thousands of volunteer workers—skilled specialists—studied the work of the people's universities and also provided them with valuable assistance. The organizational committee set up by the board of the *Znaniye* society, which included representatives of all interested central organizations and of all the Union Republics, awarded first, second and third degree diplomas and special honorary certificates to 646 people's universities, to some 300 organizations and institutions which rendered the most valuable assistance to these universities and to 2,655 rectors, deans, council members, lecturers, teachers and other enthusiastic contributors to people's universities. One of the most important results of the nation-wide review of people's universities was to ascertain the experience of the best and make it available to all. This is one of the most important results but by no means the only one.

The review gave impetus to new creative initiative, made it possible to raise in a new way a number of questions concerning the state of affairs and prospects for developing people's universities, to determine and to a certain extent eliminate shortcomings, to involve many more volunteers in assisting the people's universities and to help many universities achieve further progress.

People's universities have a great future. There are all indications that soon every state research establishment or college will have a volunteer people's university attached to it. The Ministry of Higher and Secondary Specialized Education and the board of the *Znaniye* society have already drawn up a plan for joint work in this field.

This, however, does not imply that people's universities can be established only on such a basis. As there are a great many specialists everywhere in the country, people's universities can successfully function at many collective and state farms, let alone industrial enterprises.

Thus, a people's university is operating at the Donetsk Iron and Steel Mill. Previously there was a university of technical progress here with 15 departments, mainly for engineers and technicians. In March 1963, the plant's workers published an appeal calling for a considerable expansion of the university. "The time has come," they wrote, "when all the workers of industrial enterprises should study and every engineer should not only learn himself but as a social duty should help the workers to learn." Soon the enrolment at the people's university increased to 4,000. Classes are held twice a month. The worker-students learn new techniques, advanced technology, automation, mechanization as well as the economics of their production. Instruction is given in the form of lectures and seminars, the lecturers being the plant's own engineers and production innovators as well as teachers from the Donetsk Polytechnical Institute and the local branch of the Ukrainian Metal Institute.

This is a big plant which, moreover, is situated close to a big college. But with a certain effort, popular education can well be organized not only in such conditions. In the little town of Cesis, Latvia, there are no colleges, nor even a secondary technical school. All they have there is a vocational school and an innovators' social club at the local House of Culture. Yet on this meagre basis a people's university was set up. Though it has only one class, it presents a vivid example of what popular education can do. Improvements developed by the students in their graduation papers in one year yielded a saving of 250,000 roubles.

A major function of the people's universities is to make every person feel the vital necessity of self-education, or, as the Russian scientist K. A. Timiryazev aptly put it, to stimulate "mental appetites which, once acquired, one can no more lose than one's material appetites."

The principal measure of success of a people's university is its ability to stimulate in its students a quest for learning and habits of self-education. Highly promising in this respect are self-education consulting centres being set up at people's universities. Also very helpful are good bibliographical services.

Indeed, it is not so simple to select the book most suited to the given need of self-education. Academician Vavilov, First chairman of the society, then the President of the USSR Academy of Sciences, said, that modern man, lost in an ocean of books, is like a prospector trying to find grains of gold in a mass of sand. In the 46 years of Soviet rule there have been published some 2,000,000 titles of books in 89 languages of the Soviet peoples and 49 foreign

languages. The publishing houses in Kazakhstan, for instance, annually put out more than 1,500 titles of books and pamphlets totalling 205,000,000 copies. It may be hard to believe but only 45 years ago the Kazakh people did not even have an alphabet. And on their land, five times the size of France, there were no publishing houses or printshops.

Upwards of 3,000,000 copies of books are daily printed in the Soviet Union. Back in 1921 Lenin dreamt of the country having 50,000 libraries and each receiving two copies a year of all the necessary textbooks, of the works of world classical literature and books of modern science and technology. Today there are over 132,000 Soviet libraries having 920,700,000 copies of books and magazines. All this is open and free to all. But to select what one needs best a good bibliographical service is required, just as an accurate navigation chart is needed for sailing on the boundless ocean. Each year various branches of *Znaniye* give more attention to drawing up such "navigation charts."

A Road Measured by the Span of Life

They say that some 50 years ago Paul Langevin, the prominent French physicist, was told he was one of the three persons in the world who understood the essence of the theory of relativity. On hearing this, Langevin asked: and who is the third one? Only three persons (and even then the third one was questionable) understood the new theory at that time. Today hundreds of thousands of scientists and engineers must understand it for their practical work.

This holds true for any sphere of knowledge. A specialist, if he wants to keep up with the times, has to study, literally speaking, his entire life. It's just like adage: "Studying is like rowing against the current: as soon as you rest on your oars, the current throws you back."

In February, 1965, Professor Z. A. Rogovin, Chairman of the Chemical Methodological Council of the All-Union *Znaniye* Society, launched in the society's main lecture centre a series of lectures on new developments in the chemistry and physics of polymers—for specialists. Before introducing the first lecturer, Academician V. A. Kargin, the chairman, recalled that the first series of lectures of this kind, on the chemistry and technology of high-molecular compounds, was started 22 years ago in a small semi-basement in the Polytechnical Museum. The lectures were attended by some

twenty or thirty specialists. That was quite a large attendance for that time and for the scale and scope of research that was then conducted in this field.

After the war, in 1947 and 1948, the lectures drew about 100 persons. That was a big advance.

Now, the twentieth series of lectures on these problems were opened in the Grand Auditorium seating 1,200. It was filled to capacity, with 400 more persons hearing the lecture through loudspeakers in adjoining rooms. But even these could not accommodate all who wished to attend. And these lectures, it should be noted, were for specialists.

This is a new development in the activities of the *Znaniye* society. Originally it conducted the dissemination of knowledge by educated people to those who were unable to get a proper education. This work it continues even today. Now, however, it is devoting increased attention to helping qualified specialists keep abreast of the latest scientific achievements.

Take schoolteachers, for example. Upon their erudition depends the level of education of the rising generation. If a schoolteacher does not follow the advances of science and keeps only within the bounds of the textbooks and the knowledge acquired at college, he will impart to his pupils knowledge that is out of date. There is, of course, a whole network of state refresher courses which teachers take at certain intervals. But one cannot constantly attend these courses and teach at the same time. Therefore, the society conducts informative lectures for schoolteachers by volunteer scientists and other specialists.

For teachers of history, the society, with the aid of scholars from the Institute of History of the USSR Academy of Sciences, is running a special series of lectures, consultations and talks on new research by Soviet historians. The lectures are read by prominent scholars who carry on this research. Similarly, a series of lectures for teachers of literature is conducted by the society jointly with the Union of Soviet Writers.

The Moscow branch of the society, together with the city Education Department, holds Teacher's Days once a month when seminars are given for teachers on the latest scientific achievements and advanced teaching methods.

The first seminar took place in December 1963. Academician V. A. Kargin spoke on modern chemistry of high-molecular compounds; Professor A. V. Peterburzhsky, D. Sc. (Chem.), on the role of chemistry in the development of agriculture; Professor A. V. Khokhlov, D. Sc. (Chem.), on the results and prospects of

research in antibiotics. The seminar was also addressed by Professor V. E. Plyushchov, D. Sc. (Chem.); and L. A. Tsvetkov, M. Sc. (Education). At the second seminar, devoted to physics, the speakers were Professor V. I. Siforov, a Corresponding Member of the USSR Academy of Sciences; Professor A. A. Abrikosov, D. Sc. (Phys.-Math.); and Professor O. A. Waisenberg, D. Sc. (Phys.-Math.). The third seminar on biology, was addressed by Academician A. I. Oparin; Professor Z. I. Zhurbinsky, D. Sc. (Biol.); and A. V. Yablokov, M. Sc. (Biol.).

Since then Teacher's Days have become a good tradition in Moscow, and not in Moscow alone.

Leninakan, Armenia's largest industrial centre next to Yerevan, has a People's Pedagogical University which is attended by 200 teachers. Such people's universities are doing a good job in many regions of the Russian Federation.

In the city of Voronezh, for instance, a people's university for teachers has been functioning since January 1962. It has biology, geography, history, mathematics, physics, chemistry and philology faculties and a faculty for elementary classes with a teaching staff made up of 36 professors, 76 associate professors and people with post-graduate degrees and 16 teachers from the Voronezh State University. The number of students has reached 1,320. Instruction is given at the state university, enabling those who attend to become familiar with the equipment and the work of the laboratories, the computer centre and study rooms, etc. At the end of each academic year the wishes of the participants are carefully considered in planning thematic material for the next year.

A special feature of the Kazan People's University for Teachers is that it was organized by all the higher educational establishments of Kazan, capital of the Tatar Autonomous Soviet Socialist Republic. Those attending the biology faculty have this to say: "The university helps us in our teaching, allows us to go beyond the school textbooks, to present material in our lessons that is richer in content and more accessible, in a more interesting way. The university trains us for more fruitful independent work and also helps us improve our teaching methods."

The society likewise serves engineers, technicians and other professional people.

A People's University of Technological Progress is functioning in Moscow. Set up in 1960 on the initiative of Academicians A. N. Nesmeyanov, A. I. Berg and A. A. Blagonravov, the university now has 18 faculties: instrument-making; machine-building; chemical industry; electrical engineering; radioelectronics;

light industry; automation; electronic computers; to name but a few. The university's enrolment exceeds 7,000 specialists in different fields from 700 enterprises in Moscow. Its teaching staff, entirely made up of volunteers contributing their services without remuneration, includes 500 teachers of Moscow colleges, among them 21 academicians (full members) or corresponding members of the USSR Academy of Sciences; 130 doctors of sciences and professors and also leading industrial experts. The university has the free use of the facilities (classrooms, laboratories, libraries) of many of the biggest colleges in Moscow, from which it also draws its teaching staff.

For physicians there is a permanent lecture centre at the Central Medical Refresher Institute, where leading scientists and specialists read lectures on major problems of modern medicine. The *Znaniye* society also conducts series of lectures for doctors jointly with the Department of Philosophy of the USSR Academy of Medical Sciences. It has initiated a series of lectures on philosophical problems of medicine and conducted a broad discussion on causality in medicine. In Volgograd, a lecture centre for doctors is functioning under the auspices of the society's organization at the local medical institute.

This kind of service for specialists has not yet been launched everywhere. So far it is conducted mainly in Moscow and other big cities with large scientific communities. But the available experience shows that there is every possibility of extending it to all professional groups.

The society is promoting it in every way. This can be illustrated by recent developments in regard to farm specialists.

When the Soviet Union launched its plan for the accelerated development of chemical production, public interest in chemistry at once sharply increased. In 1963 more than twice as many public lectures on chemical problems were read as in the preceding year, and in the first half of 1964 twice as many as in 1963. In the countryside, millions of people joined the sweeping movement to acquire agrochemical knowledge.

But where was the society to get lecturers? It could, of course, draw on the vast army of agronomists and zootechnicians. But most of them had been at college when hardly any agrochemistry was taught. Furthermore, as science advances, there constantly appear new mineral fertilizers, insecticides and other agricultural chemicals.

The society had to muster all its forces to help the farm specialists fill the gaps in their knowledge in order to be able efficiently to manage agricultural production in accordance with modern requirements. It launched a wide network of seminars and courses where scientists helped farm specialists to refresh their knowledge, acquire the necessary scientific information and devise methods of imparting knowledge to the people on the farms. The society's publishing house quickly put out, in large editions, sets of booklets on all the basic questions of agrochemistry, written by eminent scientists and specialists. It also issued and sent to all its rural organizations other material aiding lecturers to disseminate chemical knowledge among the farmers.

From the Front Line of Science

No less important than helping specialists refresh and extend their knowledge in their own fields is the promotion of exchange of information between specialists of related branches of science. One cannot but agree with the well-known British scientist and popularizer of knowledge, Richie Calder, who says that a popularizer of science has to interpret the language of science for the broad public but that very often he has to interpret also for scientists.

In this connection let us cite the following fact. The USSR Academy of Sciences Publishing House has issued a voluminous book, entitled *Through the Eyes of a Scientist,* which popularly describes the present state of the principal natural sciences. In his foreword to the book, Academician A. N. Nesmeyanov, former President of the Academy of Sciences, writes: "One may confidently say that many readers desire to have a handy book which presents a popular compendium of the major achievements of natural science in all the fighting sectors of the scientific front along its entire extent, from the macrocosm to the microcosm. I, too, had such a desire, when not only by inclination but by the requirements of my office I had to be interested in the advances of science on all fronts, not only in the sector close to my own speciality!"

As we see, in our days of the rapid development of sciences and their vast specialization, even an academician needs a popular book, or a popular lecture, to see the entire front of the sciences as a whole, to comprehend the babel of languages in the chorus of sciences, to understand the interrelationships of separate trends of development and their relation to the general direction as a whole.

Engineers and skilled workers, people connected with new fields of production where they implement the latest scientific achievements, are interested in the content and methods of every scientific subject no less than scientists. Quite often engineers, college students and workers attend a lecture on, say, physics alongside researchers in chemistry, biology or economics. They are all united by an interest in general problems and general methods which are applied in physics but may be applicable to chemistry, biology, technology, i. e., to their own field of work.

Virtually everybody is interested in the prospects of science arising from modern problems which often are far from solution. Nothing arouses such a deep interest in science as being initiated into processes of its evolution and progress. That is why *Talks on Topical Problems of Science*, launched by the society's main lecture centre, have aroused such enormous interest.

The fundamental aim of these talks is to attract the attention of millions of people to urgent, still unsolved scientific problems. This is a manifestation of the democracy of science inherent in socialism, democracy which is inseparable from the practical application of science.

A distinguishing feature of these talks is that they are devoted to problems which are keenly discussed among scientists. The talks, as it were, present information from the front line of science. And the scientific discussions are thus extended far outside the scientific circles. By simply buying a 30-kopeck ticket, any person can join these discussions and get first-hand information about what scientists are working on and answers to all his questions.

In this way people learn early about the latest discoveries and hypotheses. It was in a talk on the theory of elementary particles, given in March 1964, that Academician I. E. Tamm, the world-famous scientist and Nobel Prize winner, first related the possible results of his reflections on a uniform theory of elementary particles. This fact as well as many other instances of highly important scientific news given in popular talks to large audiences are very indicative. Science is no more the realm of scientists alone, it is increasingly becoming the concern of the entire people.

Talks on topical problems of science are held regularly once or twice a month. A mere enumeration of the subjects taken up in the talks indicates their range and topicality: Structure of Matter, Power Sources of the Future, Birth and Evolution of Galaxies and Stars, Problems of the Theory of Elementary Particles, Advances of Chemistry, Chemistry Creates New Materials, Chemistry of Life, Manned Space Flying, Prospects of Obtaining and

Studying Transuranium Elements, Results of the Geneva Conference of Atomic Scientists and Specialists, Problems of Modern Physiology, Problems of Molecular Biology, Problems of Thermonuclear Research, Problems of Biophysics, Physics in 1964, The Problem of Cancer, Problems of Geological Exploration, Chemistry and Medicine.

Most eminent scientists take part in these talks. Thus, on the subject of the birth and evolution of galaxies and stars, the talks were addressed in the course of one evening by:

Academician V. A. Ambartsumyan of Armenia, the world-renowned astrophysicist who worked in the field of the structure of stars, the physics of gaseous and dust nebulae, stellar astronomy, dynamics of stellar systems, was the founder of the school of theoretical physics in the USSR, Vice-President of the International Astronomic Society;

Academician V. A. Fok, prominent researcher in quantum mechanics and electrodynamics and the general theory of relativity; Academician Y. B. Zeldovich, who attained this august scientific rank at the age of 32 and is a leading specialist in atomic physics and astrophysics;

Academician B. M. Pontecorvo who in 1963 won the Lenin Prize for research in elementary particles;

Professor I. S. Shklovsky, astrophysicist, noted for his theory of the ionization of the solar corona, for his quantitative division of Galaxy radiation into thermal and non-thermal, for his studies on the origin of cosmic rays in the shells of novae and supernovae, for his investigation of the aurorae and infra-red radiation of the night sky.

All these are men who by their work advance science and who speak on subjects of their own work. The fact that scientists of such great eminence take part in these talks is a major feature of this form of the society's activity.

Here again it should be noted that those engaged in this activity are moved solely by their high public awareness and dedication to broadcasting their knowledge. Scientists not only speak at these talks. They also plan and organize them. Thus, the first session was arranged by Professor B. G. Kuznetsov, Chairman of the International Einstein Committee; the second by Corresponding Member of the USSR Academy of Sciences V. I. Popkov; the third by Professor Y. B. Smorodinsky; the fourth and fifth by Corresponding Member of the USSR Academy of Sciences V. I. Goldansky; the sixth by Academician P. A. Rebinder, to name but a few.

Field of Activity Expands

Good things are usually emulated. The idea of conducting talks on topical problems of science has spread from Moscow to other Soviet cities.

Such high-level talks on topical problems of science as in Moscow cannot, of course, be organized in every city, let alone the countryside.

Although the all-embracing construction of communism has brought education and culture to the remotest parts of the country, there still remain large distances from the cultural centres to outlying collective farms, prospecting parties scattered in the taiga wilderness, and young industrial towns which as yet do not have any technical schools and well-stocked libraries. Not everywhere can one meet a scientist and get the latest scientific information. Yet the interest in such information is equally great everywhere.

This interest is met, partially, by the society constantly expanding and improving its publishing work. For example, the *Talks on Topical Problems of Science* are printed in the society's magazine *Science and Life* and reprinted in separate pamphlets.

Lenin called popular literature a "textbook for the people." This terse definition guides the society in all its publishing activities. Briefly, the requirements in regard to the specialization, content and form of the society's publications are as follows:

to expound simply and lucidly the fundamentals of modern knowledge which raise the educational and cultural levels of the people and advance the practical work of the builders of communism;

to publish literature for the widest sections of the population considering their education and special training;

to respond quickly to major home and world events, inform the public of the latest achievements of science, technology and culture in the Soviet Union and abroad.

The society's publishing house is the only universal publishing organization in the Soviet Union which puts our popular-science literature for the general reading public as well as its special publication *Aid to Lecturers*. Its book output has doubled in the past four years.

The publishing house issues seven series of pamphlets for people's universities: on natural science, technology and economics, agriculture, literature and the arts, law, education, and medicine. Each series consists of 12 monthly pamphlets. Every series is circulated by subscription at very reasonable rates: 1 rouble 80 kopecks a year. Fourteen series of pamphlets are issued, also mainly by subscription, on history, philosophy, economics, technology, agriculture, literature and the arts, international affairs, biology, and medicine, physics, mathematics and astronomy, youth, chemistry, natural science and religion, soil science, radio electronics and communications. Each series consists of 24 pamphlets a year of about 60 pages.

The number of subscribers to these editions has nearly doubled in the past four years—to 600,000.

The society's magazine *Science and Life*, which in 1964 marked its thirtieth anniversary, is very popular. It is a really mass popular-science publication catering to widest sections of workers, collective farmers and professional people. In simple, understandable language it describes the latest scientific and technological achievements in the Soviet Union and abroad. It shows how scientific and technological achievements are applied in communist construction. It supports the countrywide public movement to protect the beauty and riches of nature and promote the best utilization of the country's natural resources.

It promotes rational rest and recreation, furthers polytechnical education of children, informs them about scientists, inventors and innovators in an interesting way, and illuminatingly describes the future of science and technology. Many articles appearing in the magazine are regarded as models of popular-science writing.

The magazine's popularity can be judged from the fact that its circulation has increased from 167,000 in 1961 to 3,100,000.

Science and Religion is another magazine published by the society. By supplying well-founded knowledge it inculcates a scientific world outlook in people. Only five years old, the magazine has increased its circulation from 70,000 in 1959 to 200,000.

The society also publishes a political magazine, *International Affairs*, in Russian, English and French. Founded 10 years ago, it has won favour with Soviet and foreign readers and is sold in 84 countries. The magazine has become a valuable aid to speakers on international problems. Especially popular is its section *Help for the Lecturers* which offers abundant reference and methodical material. Lecturers on international matters took an

active part in a discussion on the preparation and delivery of lectures organized by the magazine.

The society disseminates knowledge not only through its own publications. Its material is regularly featured in the newspaper *Izvestia* under the heading *Scientists Answer Readers' Questions*. *Uchitelskaya Gazeta* (Teachers' Gazette) once or twice a month carries a full page under the heading *In the World of Scientific Thought*, which is prepared jointly by the newspaper and the society's commission for the dissemination of educational knowledge. Similarly, *Znaniye* publishes their articles in the newspapers *Selskaya Zhizn* and *Soviyetskaya Rossia* (Village Life and Soviet Russia); and local *Znaniye* societies publish their material in the local press.

However, this also does not limit the influence of *Znaniye* on the nature and content of popular science publications. All literature in this genre comes within the scope and influence of this society. It is no accident that it is *Znaniye* that organizes and conducts national competitions for the best popular science works—books and booklets, as well as articles published in magazines and newspapers. Academician D. I. Shcherbakov, a popular science enthusiast, heads the contest jury. The results of these interesting competitions are published annually on July 7, the anniversary of the *Znaniye* society. The winners are awarded first and second degree diplomas as well as cash prizes. Publishing houses that have submitted the largest number of prize winning works are presented with diplomas.

Thus, the printed and the oral dissemination of knowledge supplement one another.

Films are widely used to popularize scientific knowledge. Seven Soviet studios put out some 400 scientific, popular-science, and documentary films a year. To facilitate their use a handy catalogue has been compiled where a lecturer can select any film he wants to illustrate his lecture.

New forms of disseminating knowledge through films are continually developed. A good example was a film-lecture by Academician D. I. Shcherbakov on the mineral wealth of the Soviet Union. The lecturer's fascinating story about the Soviet Union's fabulous natural resources and their prospects was illustrated by factual reels.

Another illustrative material widely used is film slides. To meet the needs of disseminating knowledge, the USSR State Committee for Cinematography has made it incumbent on the film slides studio to consult its production plans with the society's scientific methodical councils for the respective fields of science.

The system of people's universities includes cine-universities which also follow programmes drawn up by the society and offer regular courses in various fields of knowledge. Here talks by scientists are illustrated by selected feature films, popular-science films, documentaries, or relevant sequences from them. A university at the Central Film Club, offers the following courses: *Literature and Art; Nature and Man; In the World of Science and Technology; With a Cinecamera Around the World.* The cine-universities are extremely popular. Subscriptions to courses at cine-universities of educational knowledge, opened early in 1965 in a local cinema in Moscow and in a workers' club in Khimki (a small town near Moscow), were sold out in a short time.

The society is increasingly cooperating with the radio and television services.

Since television in the Soviet Union reaches vast audiences it is of immense importance as a medium of disseminating knowledge.

At the beginning of 1965 the Central Television Studio launched its third programme devoted to education and popularization of science. The programme is planned and conducted jointly with the society.

The society, numbering in its ranks the leading specialists in all fields of knowledge, is best able to select the most topical scientific problems and recommend the most competent speakers. The studio takes care of the organizational part and provides the technical facilities and services.

Such a jointly-conducted programme is *Knowledge To All.* Prominent Soviet scientists appear before millions of TV viewers who through the facilities of television are taken, as it were, to scientific laboratories, factory shops, or farm fields. These lectures are recorded and shown all over the country. Dubbed into many languages of the Soviet peoples, they are easily accessible also to those who do not sufficiently know Russian. The USSR is a multinational country and broadcasts are conducted in more than 100 languages of the Soviet peoples. In this way popular TV lectures by the highest authorities are brought to the remotest communities.

A distinctive feature of the *Knowledge To All* TV programmes is that they, like people's universities, give regular courses in various fields of social, natural and technical science.

This however, does not mean that the programmes are confined to special, restricted audiences. They are in fact attractive and interesting to all.

A Good Cause Knows No Boundaries

By its very essence science is international. Proceeding from this the *Znaniye* society promotes friendship between scientists of different countries for the peace, happiness and prosperity of all nations.

To put scientific achievements at the service of the people—and dissemination of knowledge plays no mean part here—is not only to promote scientific and technological advance, but to further mankind's social progress. Knowledge is particularly important to those nations whose development was until quite recently retarded by the colonialists. To help these nations sooner to get on their feet and build up their own highly developed economies, other nations must generously and unselfishly share their knowledge and experience with them.

The *Znaniye* society does much to publicize in the Soviet Union foreign scientific achievements and to popularize abroad the achievements of Soviet science and technology. This aspect of the society's activity is only beginning to develop and doubtlessly has great prospects.

Under agreements between the Soviet Union and other countries on cultural and scientific cooperation, the society organizes mutual visits of scientists.

In 1964, 37 Soviet lecturers went abroad under the auspices of the society, including four to Bulgaria, six to Hungary, five to the German Democratic Republic, three to Mongolia, five to Poland, four to Rumania and 10 to Czechoslovakia. In the same year, at the invitation of the *Znaniye* society, 63 lecturers from abroad addressed Soviet audiences, including five lecturers from Bulgaria, ten from Hungary, fifteen from the German Democratic Republic, three from Mongolia, twelve from Poland, two from Rumania and sixteen from Czechoslovakia.

The subjects of the lectures are always determined by the inviting side. Exchange of lecturers helps the cooperating countries to learn more about each other, share know-how for mutual benefit.

Znaniye society readily shares its experience with friends and at the same time is greatly interested in the valuable experience in disseminating knowledge amassed in the socialist countries. When, for instance European socialist countries held a conference in Prague on the development of people's universities, L. V. Dubrovina, Vice-Chairman of the society's board, was delegated to that conference. L. V. Dubrovina, formerly First Deputy Minister of Public Education of the RSFSR, since retirement has devoted her knowledge and vast experience to developing people's universities. Her inexhaustible energy and enthusiasm, for this work has won her respect and gratitude of wide sections of the public. On returning from the conference in Prague L. V. Dubrovina and Dr. V. I. Gorushkin, Rector of the Moscow People's University on Technical Progress, reported in detail on this conference, first to the Council of People's Universities, then to the Presidium and later to a Plenary Meeting of the board of the *Znaniye* society. *Znaniye* organisations well benefit from the valuable experience discussed at the conference by representatives of Czechoslovakia, the GDR, Bulgaria, Yugoslavia, Hungary, Poland and Rumania.

Beginning with 1961, *Znaniye* society's lecturers have delivered lectures and talks abroad during Soviet exhibitions there as well as during international fairs in which the Soviet Union participated. During these years, the society's lecturers have visited fairs and exhibitions in Poland, Czechoslovakia, the German Democratic Republic, Hungary, Yugoslavia, Great Britain, Japan, Brazil, Ghana, Syria, the Sudan, Italy, Cyprus, the United Arab Republic, Mali, and other countries.

The society's institutions are also expanding their international contacts. Thus, the Polytechnical Museum, which is a major centre for popularizing the achievements of Soviet science and technology, attracts many foreign specialists. In the past two years alone, the Museum was visited by over 600 groups from more than 50 countries. Besides that, various foreign exhibitions are held in the Museum. Recently such exhibitions demonstrated various aspects of life in the United States, Denmark, Japan, the German Federal Republic, Italy, France, Sweden, the German Democratic Republic, Finland and other countries. As a member of the Soviet Committee of the UNESCO International Council of Museums, the Polytechnical Museum maintains contacts with technical museums abroad.

The *Znaniye* society's Houses of Scientific and Technical Propaganda closely cooperate with similar institutions in Czechoslovakia, Hungary, the German Democratic Republic, and

Poland. Seminars and conferences held by these houses are attended by specialists from these countries and vice versa.

So far, regular contacts and systematic exchanges of lecturers and know-how are maintained chiefly with socialist countries which have organizations similar to the Soviet *Znaniye* society.

Such contacts will, of course, grow and extend to ever more countries. The *Znaniye* society never misses a chance to have scientists or public leaders from different countries, who visit the Soviet Union at the invitation of other organizations, speak in its halls.

Thus, at the society's main lecture centre Soviet audiences have heard Professor John Bernal, F.R.S.; Professor Dirac, F.R.S., of Cambridge University; Sahib Singh Sokhey, the well-known Indian public leader; Jiri Hanzelka and Miroslav Zikmund, the famous Czechoslovak travellers; Professor Paul Doty, of Harvard University, USA; Professor Norris Houghton, artistic director of the Phoenix Theatre, New York; Professor P. E. Fecjarde, of the Netherlands Higher Technical School; Waldo Atiazy, Chilean public figure; Professor Carl Steinbuch, of West Germany; Dr. Daniele Petrucci, the Italian scientist; Professor Charles Cowlis, of Oxford University; Nicolas Guillen, Cuba's People's Poet; Luna Alfredo Sanchez, member of the Colombian National Collegium of Journalists.

The magazine *Science and Life* and a variety of publications issued by the society's publishing house widely familiarize the Soviet reading public with the achievements of science and technology abroad, fostering goodwill between nations.

This purpose is also served by the *Science and Mankind* yearbook, a relatively new periodical put out jointly by the society and the Academy of Sciences of the USSR. The yearbook is a forum for progressive scientists of different countries, who, like the participants in the Pugwash Conference, strive to find ways of bringing all men of goodwill closer together. By featuring articles and letters by foreign authors, the yearbook forges this spirit of cooperation.

In his introduction to the first issue of the yearbook, President Mstislav Keldysh of the Academy of Sciences of the USSR wrote: "Forward-looking scientists of all countries are actively fighting for scientific achievements to be used for the good of mankind; they are actively fighting for peace and progress. Science should unite scientists in their noble peace efforts, in their constructive work. Scientific research should surmount national

boundaries. I would like to express the hope that the publication of the *Science and Mankind* yearbook will serve the noble aims of peace and human progress."

The idea of publishing the yearbook, this new form of cooperation of scientists of all lands in disseminating knowledge, was welcomed by scientists the world over.

Lord Bertrand Russell wrote that he had learned with great interest of the proposed publication of the yearbook and would contribute to it with pleasure.

Nobel Prize winner Professor Rudolf Mössbauer of Pasadena, California, USA, discoverer of the Mössbauer effect, though he was busy, found time to write an interesting article, which like Lord Russell's contribution, appeared in the yearbook's first issue.

The great Danish physicist, Niels Bohr, three days before his death, on November 16, 1962, expressed his wish to write for the yearbook as soon as his health permitted. Unfortunately he never recovered to fulfil his wish.

The yearbook tells about major scientific developments in the world. Its motto is: "Principal Events of World Science Presented Lucidly and Accurately." The materials it prints are highly authoritative.

Written graphically and vividly, they capture the readers' imagination by the power of their facts and the conclusions drawn, show how boundless and many-faceted the human mind is and how much it can do.

The yearbook embraces all basic sciences in which great events have lately occurred. It is divided into the following sections: Man; Particles; The Universe; Technological Progress; and, beginning from the third issue, Calendar of Great Discoveries and Inventions. The introductory part of each issue contains philosophical articles on the role of science in modern society.

The yearbook is sometimes called a magazine of Lenin and Nobel Prize winners. Indeed, more than half of the yearbook's contributors are holders of the highest prizes awarded to scientists in the Soviet Union or abroad. As a rule, the stories of scientific discoveries and achievements are written by those who have made them.

The yearbook's contributors come from many countries and all continents. Besides Soviet scientists they include scientists from the United States, Great Britain, France, Canada, Italy, Ethiopia, India, Brazil, Hungary, Sweden, Czechoslovakia, Guinea, Norway, Ghana, Poland, Japan, the United Arab Republic,

Australia, Kenya. They also include the heads of big international organizations: UNESCO Director General Rene Maheu, of France, and FAO Director General B.P. Sen, of India.

Not all contributors to the yearbook are ideologically like-minded. Many in the Soviet Union do not share the philosophical views of some of the foreign contributors. Ideological differences, however, need not be an obstacle to mutual contacts. Every upright person duly appreciates any scientist's contribution to the progress of world science, though he may not agree with all the views of the given scientist.

Thus, in the foreword to the third issue of the yearbook (1964), published in 100,000 copies, we read: "In accordance with the original idea of the yearbook we publish works whose authors belong to different social systems and hold different philosophical views... We invite the thinking and discriminating reader to judge for himself the multifarious and, we hope, rich material contained in this volume.

"We feel sure that a person firmly adhering to the materialist conception will, while taking the informative substance from the articles offered here, be able to assess correctly not only their factual aspect but also their philosophical ideological trend. In conclusion, we should like to express the hope that the traditionally free exchange of views by leading scientists, adopted in our yearbook, will play its part in bringing together scientists and nations, which the world so needs, and will help the reader more deeply and fully to comprehend the ideas of modern scientific progress."

From time immemorial mankind has dreamt of a single language understandable to all. At the dawn of history people already perceived that where there is a common language there is understanding and mutual respect. Thus, in the legend of the Tower of Babel a common language was associated with work for a common aim, and confusion of languages with war and destruction.

Pooling the efforts of the public of all countries in the noble cause of popularizing knowledge is a good and effective means of further cooperation and understanding between nations, for human progress. It is appropriate to recall here the words of Maxim Gorky, the great Russian writer and humanist, who even before the triumph of the Socialist Revolution dreamt of the time when mankind "having mastered the whole experience of the past and present, having evenly distributed throughout the world the fruits of its intellectual work, will create conditions for the free and all-round development of the individual—it will then experience joy unknown to us, will enrich our planet with beauty unthinkable to us."

For eighteen years the *Znaniye* society has been actively expanding its fruitful work. For eighteen years it has been popularizing and disseminating knowledge among the broadest mass of the people. It is impossible to imagine the cultural life of the Soviet Union without the activities of this social organization which unites the best representatives of the Soviet intelligentsia.

Its activity embraces everything that stimulates the development of the human personality, everything that broadens one's horizon, inspires lofty ideals, elevates one morally and intellectually, helps one acutely to discern good and evil and acutely to react to it—in brief everything that uplifts all that is truly human in man.

The society has traversed a great road. It has accumulated rich experience. Fascinating prospects lie before it.