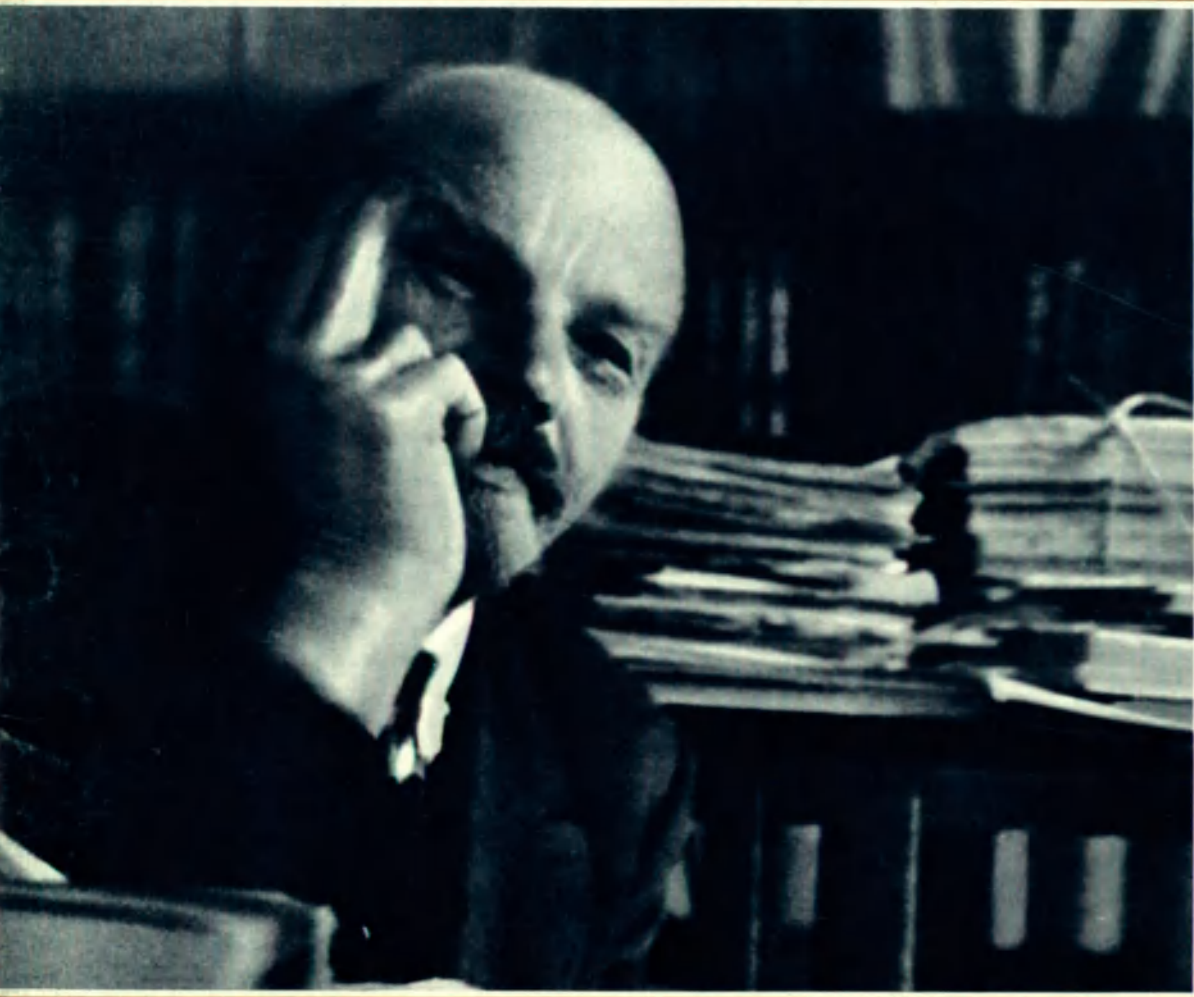




A window open on the world

The Courier

July 1970 (23rd year) - U. K.: 2/-stg - Canada: 40 cents - France: 1.20 F



1870-1970

LENIN

and
education
science
culture



THE ART
OF
JAVA



Photo © Georges Bourdelon, Paris

TREASURES OF WORLD ART

45

Syria

Women of Palmyra

These three women, their drapes mingling gracefully in a single arabesque-like pattern, were carved 1,900 years ago on the entablature surmounting the great temple of Baal at Palmyra, Syria. Another fragment of the same relief shows bearers of offerings and the camel caravans to which the city owed its fame and fortune as a trading centre. Palmyra (the Tadmor, "city of palms", of Antiquity) dates back some 4,000 years, but reached the zenith of its influence and splendour in the first centuries of the Christian Era. Its imposing ruins rising above the desert 150 miles northeast of Damascus still recall this period when it was one of the greatest cities of Asia Minor.

1 JUL 1970

PUBLISHED IN 13 EDITIONS

English	Japanese
French	Italian
Spanish	Hindi
Russian	Tamil
German	Hebrew
Arabic	Persian
U.S.A.	

Published monthly by UNESCO

The United Nations
Educational, Scientific
and Cultural Organization

Sales and Distribution Offices
Unesco, Place de Fontenoy, Paris-7*

Annual subscription rates: 20/-stg.; \$4.00 (Canada); 12 French francs or equivalent; 2 years: 36/-stg.; 22 F. Single copies: 2/-stg.; 40 cents; 1.20 F.



The UNESCO COURIER is published monthly, except in August and September when it is bi-monthly (11 issues a year) in English, French, Spanish, Russian, German, Arabic, Japanese, Italian, Hindi, Tamil, Hebrew and Persian. In the United Kingdom it is distributed by H.M. Stationery Office, P.O. Box 569, London, S.E.1.

Individual articles and photographs not copyrighted may be reprinted providing the credit line reads "Reprinted from the UNESCO COURIER", plus date of issue, and three voucher copies are sent to the editor. Signed articles reprinted must bear author's name. Non-copyright photos will be supplied on request. Unsolicited manuscripts cannot be returned unless accompanied by an international reply coupon covering postage. Signed articles express the opinions of the authors and do not necessarily represent the opinions of UNESCO or those of the editors of the UNESCO COURIER.

The Unesco Courier is indexed monthly in The Readers' Guide to Periodical Literature, published by H. W. Wilson Co., New York, and in Current Contents - Education, Philadelphia, U.S.A.



Editorial Office
Unesco, Place de Fontenoy Paris-7*, France

Editor-in-Chief
Sandy Koffler

Assistant Editor-in-Chief
René Caloz

Assistant to the Editor-in-Chief
Lucio Attinelli

Managing Editors

English	Edition: Ronald Fenton (Paris)
French	Edition: Jane Albert Hesse (Paris)
Spanish	Edition: Francisco Fernández-Santos (Paris)
Russian	Edition: Georgi Stetsenko (Paris)
German	Edition: Hans Rieben (Berne)
Arabic	Edition: Abdel Moneim El Sawi (Cairo)
Japanese	Edition: Takao Uchida (Tokyo)
Italian	Edition: Maria Remiddi (Rome)
Hindi	Edition: K. D. Bhargava (Delhi)
Tamil	Edition: T.P. Meenakshi Sundaran (Madras)
Hebrew	Edition: Alexander Peli (Jerusalem)
Persian	Edition: Fereydoun Ardalan (Teheran)

Assistant Editors

English Edition: Howard Brabyn
French Edition: Louis Frédéric
Spanish Edition: Simon Izquierdo Perez

Photo Editor: Olga Rödel

Layout and Design: Robert Jacquemin

All correspondence should be addressed to the Editor-in-Chief

Page	
4	LENIN AND EDUCATION, SCIENCE, CULTURE <i>by Marie-Pierre Herzog</i>
6	LENIN AND THE DEVELOPMENT OF SCIENCE <i>By Mstislav Keldysh</i>
12	EDUCATION KEY TO SOCIAL TRANSFORMATION <i>By Vsevolod Stoletov</i>
16	LENIN AND THE CULTURAL RIGHTS OF MINORITIES <i>By Lauri A. Posti</i>
18	"IF YOU CAN READ TEACH YOUR NEIGHBOUR"
22	THE ART AND MONUMENTS OF JAVA <i>By Hiroshi Daifuku</i>
28	HUNTING CLUES TO AN ANCIENT SUPERCONTINENT <i>By Daniel Behrman</i>
33	LETTERS TO THE EDITOR
34	UNESCO NEWSROOM
2	TREASURES OF WORLD ART Women of Palmyra (Syria)



Cover

Portrait of Lenin—detail from a photograph (reproduced here in full) taken in Moscow in 1920, showing Lenin talking to the famous English writer H.G. Wells.

Photo © APN



Detail of one of the bas reliefs that embellish the walls of the temple of Mendut, built near the great stupa of Borobudur, in Central Java, Indonesia, and contemporary with it (late 8th century A.D.).

Photo © Louis Frédéric - Rapho

N° 7 - 1970 MC 70-2-257 A



At the last session of the Unesco General Conference held in Paris in November, 1968, the Director-General was authorized to "take certain steps to commemorate the hundredth anniversary of the birth of Lenin and, in particular, to organize a Symposium with the theme 'Lenin and the development of science, education and culture'." (Resolution 3.112).

Arranged in collaboration with the National Commissions of Finland and the U.S.S.R., the symposium was held at Tampere, in Finland, from 6th to 10th April. Specialists from twenty countries were invited to take part on a personal basis.

This issue of the "Unesco Courier", which is largely devoted to Lenin and his contribution to science, education and culture, has been prepared within the framework of the same resolution of the Unesco General Conference.

In the following article, Madame Marie-Pierre Herzog, Director of the Unesco Division of Philosophy, who organized the symposium at Tampere, analyzes the differing points of view expressed by the participants in the course of their debate.



The commemorative stamp issued by the Finnish government to mark Lenin's centenary and the Tampere Symposium organized by Unesco. Commemorative stamps have also been issued in Cameroon, India and the Soviet Union.

by Marie-Pierre Herzog

Director, Division of Philosophy, Unesco

THE Symposium held at Tampere from 6th to 10th April, 1970, brought into relief various aspects of the thought and action of Vladimir Ilyich Lenin in the fields of science, education and culture.

Everyone at the Symposium found the choice of subject both interesting and novel. Discussions began with a general recognition of the importance attached personally by Lenin to the continual quest for knowledge and his desire to combine theory with practice in his activities.

From here the Symposium took up the subject in greater detail. The participants noted that Lenin's early works already reflected his keen desire to apply marxist theory to Russia as it actually was in those days. He wanted to apply it with equal cogency to the ambiguous attitude of the intelligentsia, the lot of the peasants, the situation of the workers, supported by all the statistics, facts and figures he could marshal. In this he showed himself to be far removed from the effusions of the populists and the general confusion of thought of the time.

Many speakers praised, first, his discernment when faced with the problems of the science of his day (the foundations of which had been rudely shaken by the discovery of radioactivity and the workings of the electron), second, his broad view, expressed in *Materialism and Empirio-Criticism* in 1909, of the possible future evolution of physics as demonstrated by his famous dictum: "the electron is as inexhaustible as the atom", and, thirdly, the distinction he made between the content of the different, changing scientific theories concerning the nature of matter, and the materialist theory, as such, which could itself never change. (See article page 6.)

A dialectic theory of matter, elaborated by the Japanese scientist Professor Shoichi Sakata, was presented in this connexion by Professor Yoichi Fujimoto, Professor of Physics at the Science and Engineering Laboratories of Waseda University, Japan, in relation to recent work on elementary particles, in particular mesons.

It was shown that, while not properly speaking an educationalist, Lenin gave immense importance to education, not only in the fight for literacy instituted by the famous decree, but also under its second form in which knowledge, assimilated into the very

LENIN and education science culture

substance of life, becomes synonymous with culture.

Some participants, however, recognized in Lenin, above all, his ability as a man of action, but cautioned against attributing qualities that he did not possess to this most modest of men.

"His genius lay in his talent for decision-making as well as in his acute understanding of political situations and his eye for the opportune moment and the practical possibilities they opened up," said Professor Alfred G. Meyer, Director of the Center for Russian and East European Studies of the University of Michigan, U.S.A.

Professor Meyer stressed Lenin's unsentimentality and matter-of-factness and his resolve, despite all need for polemics, always to look the truth straight in the face, to face what he called "living life" (*zhivaya zhizn*).

"Lenin", Professor Meyer said, "is indeed the one who would be my first choice if I had to select that person who has had the most profound impact on our century. There is no doubt that the revolution he accomplished and the society he started to build have had repercussions in all areas of life, including science, education and culture. My own appraisal would be that these have not always been positive repercussions..."

After speaking at length of the great simplicity and modesty of Lenin, Professor Meyer expressed his doubts about the manner in which Lenin's personality and accomplishments were portrayed in certain quarters.

Other participants at the Symposium recalled Lenin's attitude towards problems of minority groups and languages and stressed his actions in this respect (see article by Professor Posti of the Faculty of Philosophy of the University of Helsinki, Finland, page 16). Finally, Professor Cheikh Anta Diop, Director of the Radiocarbon Laboratory of the Fundamental Institute of Black Africa in Dakar (Senegal), examined the relationship between the history of African societies and dialectical materialism.

But the focal point of the debate was Lenin and culture. A discussion began among the participants to define more clearly the reservations Lenin had made about "proletarian culture" as conceived by

Bogdanov and the Protelkult, that is, a culture arising entirely from the proletariat and wholly created by it.

It was carefully pointed out that Lenin had never subscribed to such views, not for reasons of personal taste which, in any event, he would not have introduced into the debate, but for general reasons. It was emphasized that Lenin considered of capital importance for the new culture what he described as "the assimilation of the bourgeois legacy", in other words, open acceptance of the great cultural treasures in mankind's cultural past.

"After coming to power", said Professor Alexis Rumyantsev, Vice-President of the Academy of Sciences of the U.S.S.R., Moscow, "it is in the field of culture that the real revolutionary problem lies." In a study prepared for the Symposium, Professor Rumyantsev had stated: "By culture Lenin meant the fundamental principles of human behaviour, deeply rooted in thinking, in the mind. He saw in culture the organic basis of human actions, their social, psychological and intellectual mechanism. That is why, for Lenin, the social quality of the economy, of the apparatus of state, depended necessarily on culture."

Here it is clear that the word culture is taken in a sense which goes far beyond its usually accepted meaning and in this context has much broader and wider connotations and implications.

As Jean-Jacques Marie, Professor of the Lycée Voltaire in Paris, stated: "Lenin did not defend culture as a precious object or as a relic to be admired, but as a living means to awareness, that is to say, as a factor in the proletariat's struggle for emancipation destined ultimately to produce a culture superior to the existing bourgeois culture, which it would not destroy but outstrip by integrating it into a world from which would have vanished the exploitation of man by man, opposing classes and their struggle, the division between manual and intellectual work, all of which have left their mark on the finest products of bourgeois culture."

Professor Roque Gonzalez Salazar, of the International Studies Centre, College of Mexico City, Mexico, added that one of Lenin's great merits was to "have seen clearly that man must base his creative power on the efforts of his fellows and even on those of preceding generations." ■

Lenin and the development of science

by *Mstislav Keldysh*

President of the Academy
of Sciences of the U.S.S.R.

WHEN the first man-made satellite—Sputnik 1—was launched into space, on October 4, 1957, it focused an excited world's attention on the immense possibilities open to mankind in an entirely new scientific era.

Yet this first space venture also marked a watershed in the development of science in the U.S.S.R. and when we look back towards the early days of the 1917 revolution and the years that followed it we can distinguish one hand already sowing the seeds of this triumph of Soviet science—the hand of Vladimir Lenin.

Despite the complex problems with which he was faced in the early days following the revolution, Lenin, from the first, realized the importance of the role that science was to play in the rebuilding of his country.

Indeed, all of Lenin's work—as a politician, statesman and public figure—is inseparable from science. As a scientist myself, what has always struck me in Lenin's intellectual work is the manner in which his theoretical conclusions were invariably based on a scientific analysis and critical examination of all the facts and data available. One other special attribute of his researches was the close connexion he always maintained between theoretical formulations and their practical application.

A perfect example of the way in which Lenin grasped the essence of modern science is to be seen in his analysis of the cardinal philosophical problems raised by the progress made in physics.

The turn of the century, as we know, was marked by a series of discoveries which were to lead to a complete

revolution in physics, and eventually to the development of the physics of today. Thus, the advances in electrodynamics opened the way to the theory of relativity and the discovery of new and more precise space-time relationships. Research into the theory of opaque bodies and the photo-electric effect made possible the formulation of the quantum theory.

These new ideas and theories, to which were soon to be added the discovery of radioactivity and radium, could no longer be fitted into the 19th century concept of physics or into the electro-magnetic concept of the universe that had succeeded the mechanical concept.

Serious difficulties arose. In particular, the conclusion of the classic electron theory, according to which electrons had mass and electro-magnetic characteristics, was interpreted by many mechanistic and positivist physicists of the time as a veritable "disappearance of matter". Research scientists spoke heatedly of "the big crisis in physics".

In 1909, Lenin entered the scene with his work *Materialism and Empirio-Criticism*. This was his reply to the philosophical problems raised by the latest scientific discoveries. Lenin pointed out that the crisis in physics perceptible at the beginning of the century was just the first step challenging "the old laws and basic principles", and that the change affected the postulates of physics that had been thought unalterable. The crisis, Lenin said, marked the beginning of a complete revolution in physics.

Our knowledge is relative, Lenin wrote, and knowledge of nature pro-

gresses by gradual improvement in scientific thought approaching ever closer to the truth. The great discoveries in physics at the turn of the century prove one thing, he said, namely, the inadequacy of the mechanistic concept. Matter does not "disappear" but manifests itself in new, more concrete forms, hitherto unknown, providing science with a deeper understanding of the physical properties of matter and the inter-relations existing between its different states and conditions.

"To say that matter has disappeared" Lenin wrote, "is merely to state that the limits of our knowledge of matter have disappeared and that our understanding has deepened. The properties of matter that formerly appeared absolute, unalterable and immutable . . . have disappeared and are now recognized as being relative and inherent only in certain states of matter."

He stressed that ". . . the one and only 'property' of matter that philosophical materialism recognized is that it is an *objective reality*, existing apart from our consciousness". And here he pronounced his famous philosophical dictum: "the electron is as *inexhaustible* as the atom; nature is infinite . . ."

I do not think that at that time a single physicist anywhere suspected that the electron had other properties than those of possessing mass and an electric charge. But in the half century that has elapsed since then, the electron has been revealed to have such multiple properties that the thesis put forward theoretically by Lenin is



Photo © APN



Photo © APN

Lenin's real name was Vladimir Ilyich Ulyanov. He was born at Simbirsk, now Ulyanovsk, on the banks of the Volga, on April 22, 1870. Top right, the house in which he spent his childhood. Right, the Ulyanov family—his mother Maria Alexandrovna and father Ilya Nikolayevich with their children. Lenin, seated far right, was nine years old at the time. Above, at the age of seventeen Lenin graduated from high school with high honours.



Photo © Tass



Photo © APN

Banished from the University of Kazan, a central Volga town, for his part in the student movement, Lenin settled in Samara, in 1889, where he started to study the works of Marx and engaged in revolutionary activities. This photograph, left, was taken in 1891 and was attached to his application for permission to take his law examinations. He qualified as a lawyer at the University of St. Petersburg the same year.

Arrested in 1895 at St. Petersburg as a leader of the League of Struggle for the Liberation of the Working Class, Lenin was imprisoned in this cell, below, for 14 months. Later he was exiled for three years to the Siberian village of Shushenskoye, right, where he married another political exile, Nadezhda Krupskaya.



Photo © IML Archives

DEVELOPMENT OF SCIENCE (Continued)

In 1917 one research centre, today 210

now recognized as having been widely and brilliantly proved.

The discovery that electrons were capable of behaving as waves opened up a fantastic new world to physicists. In the 1930s the positron was identified. The electron revealed a new property: united with a positron, it was transformed into a photon. There followed the discovery that the electron is an active protagonist in the phenomenon known as weak interactions and so is also a bearer of a specific charge of these interactions.

Thus Lenin's thesis has shown itself to be a great deal more than a mere prophecy. It has become a philosophical postulate of the investigation of the infinitely small. All the later developments of physics have corroborated the validity of this principle, confirming the "inexhaustibility" of the electron, and, more generally, the inexhaustible physical properties of matter itself.

Research carried out in the field of nuclear physics and, later, the physics of elementary particles has made it possible to identify a number of these particles, to dissect the structure of nucleons, and to understand the nature of their interactions in the overall structure of matter. Viewed in this context, Lenin's words, formulated in

1922, take on special significance: "Natural science is progressing with such speed and undergoing such revolutionary upheavals in every field that the sciences cannot do without philosophical conclusions."

Thus we see that not only did Lenin help to provide an answer to the difficulties facing science in his day, but he also foresaw, decades in advance, many of the trends of present-day scientific development. These have ranged from research into the structure of matter and problems of chemical energy to the study of biological agents.

In *Materialism and Empirio-Criticism* Lenin proclaimed that the new discoveries in science, far from invalidating dialectical materialism, strengthened its philosophical tenets, and re-affirmed that "modern physics . . . engenders dialectical materialism."

Thus Lenin's contributions to the philosophy of science, and the trends in scientific development which he clearly discerned, are as meaningful today as they were yesterday, and continue to have an important bearing on the methodology of contemporary science. The importance of Lenin's contribution to science cannot therefore be over-emphasized, and the theories he developed have proved

to be of fundamental importance for both the social sciences and the natural sciences.

Lenin was inspired by the exact sciences when he evolved his basic idea of the theory of knowledge. From the outline traced by Marx, he elaborated and developed the theory of reflexion which affirms that human thought reflects the external world and can in turn act upon and change it.

Thus the social sciences occupied a predominant place in Lenin's thinking, and he accorded them a primary role in the renovation of the Soviet State. In 1918 he worked for almost two months on the Government's decree to establish the Academy of Social Sciences. This was the beginning of the social science research institutions in the U.S.S.R. which were to flourish with the rapid development of education and the cultural revolution generally in the new type state.

Lenin was deeply conscious of the tremendous importance of science for development. He kept a permanent eye on all matters having to do with the organization of scientific research in the Soviet Union, and lost no opportunity to promote the maximum use of science and technology to improve the standard of living of the population.

He was convinced that under the



new regime the social role of science had changed too. "In the past", he said, "the genius of man's mind was used to provide the benefits of technology and culture to a part of the population, depriving the others of the basic essentials, education and progress. Now, all the wonders of technology, all the conquests of culture are to be the heritage of all people . . ."

Lenin saw this new role of science as part of its democratic function in society and affirmed that the new State had a fundamental part to play to guarantee its development by promoting scientific research as well as the practical uses of science.

It was with this in mind that great impetus was given to research work. Even in the most difficult years of the civil war and amidst economic ruin, scientific research centres and research workers were encouraged by Lenin to the maximum.

I am thinking particularly of the decree of the Council of People's Commissars which bears his signature and which entrusted a special committee headed by Maxim Gorki with the task of "ensuring, within the briefest possible delay, the best conditions for the research work being carried out by Academician Pavlov and his collaborators."

We know that Lenin gave his personal attention to the work of such

scientists as Constantin Timiryaziev, P. Lazarev, I. Gubkin, and many others. And his interest in new inventions and discoveries never flagged. Thus, for example, when the giant iron ore deposits were discovered in the "magnetic anomaly" that the Kursk region represents, Lenin urged that prospecting operations be undertaken at once. He gave his support to research efforts to perfect a system of hydraulic extraction of peat; and he did not fail to recognize the far-reaching significance of the experiments being carried out at the radio-technology laboratory of Nijni-Novgorod. He saw that radio, which he described graphically as "a newspaper without newsprint" and "the eliminator of distance", would rapidly become a powerful medium of cultural diffusion.

Lenin gave his unstinted encouragement to the development of aviation and other new technologies. During his lifetime were created the Central Institute of Hydro-dynamics (TSAGI) which later played a leading role in the development of Soviet aeronautics, and the National Optical Institute, which was the beginning of the Soviet optical industry.

The activities of the U.S.S.R. Academy of Sciences received his special attention. For Lenin, the participation of this scientific institution in the economic development of the country was of capital importance. As early as April 1918, the Soviet government

decided to make a considerable increase in the budget of the Academy to enable it to launch a series of large-scale experiments and giant prospecting campaigns.

It was at about this time that Lenin drew up his "Outline Plan for Scientific and Technical Undertakings" in which he placed a number of top priority problems before the Academy of Sciences, including a request for a study of the natural resources of the U.S.S.R. with a view to their rational utilization. From this point on the exploitation of natural resources was to become a dominant theme of Soviet science.

In his "Outline Plan" Lenin put forward the notion of centralized national planning, to be implemented for the first time ever in the Soviet Union. He urged "the drawing up of a plan, with the help of scientists and technologists, for the complete electrification of Russia". This initiative was to take shape in 1920 as the GOELRO Plan which was both the nation's first economic plan and its first national research project. It called for the development of the Soviet economy on the basis of a nationwide electrification programme.

In fact it was Lenin who elaborated the principles of political economy on which the entire structure of the Soviet socialist state reposed. It was he who put forward as the nation's chief task the triple objective of industrializ-



Photo © APN

In January, 1905, workers in St. Petersburg, with their wives and children, went to present their grievances to the Czar but were shot down in cold blood by the Imperial troops, above. Lenin, in exile abroad, was already working with his party for revolutionary change in Russia. The massacre at the czarist palace marked the beginning of the first Russian revolution.

The incredible hardship of life in czarist Russia made it fertile for revolution. Conditions were so harsh that there were not only "Volga Boatmen" but also "Volga Boatwomen" (below).

Photo © APN



ation, co-operative farming and the cultural revolution. Lenin pointed to the fact that industrialization without electrification was impossible and announced that "all the conquests of the human sciences, of human technology, all the discoveries and knowledge of scientists and specialists must be pooled for the one common objective of the united people."

His plan for co-operatives was Lenin's answer to the complex problem of small agricultural holdings and their conversion under socialist reform to communal ownership. His ideas on the socialization of agriculture were based on a careful study of comparative agricultural data in Russia and other countries, including the United States and the nations of Europe.

Lenin's view of the preponderant role of the Academy of Sciences in bringing about a revolutionary change in the advancement of the country was to mark its entire later development. Within half a century, the little coterie of scientists it had been composed of before the revolution, became a scientific centre of the very highest importance which was to direct the development of the natural and social sciences throughout the nation.

In 1917 the Academy had only one research centre which consisted of a few laboratories and museums. Today it controls 210 scientific establishments including 160 research institutes all of which are contributing to the development of modern science. With a complement of some 250,000 research workers, the Academy's personnel has multiplied one hundredfold and its present budget is astronomical when compared to the meagre sum expended in the earlier years.

OVER the past ten years, the U.S.S.R. has undertaken a vast programme of development of the huge natural resources of Siberia. A new branch of the Academy of Sciences has been opened in Siberia to act as a coordinating centre. Concerned with fundamental research as well as with the applied sciences, the Siberian centre at Novosibirsk has now taken the lead in certain branches of Soviet research and has won world recognition for its pioneering work. New branches of the Academy are now being established in the Urals, the Far East, and other parts of the country.

One repercussion of the national policy instituted by Lenin was the rapid development of training and research at the level of the national Republics which make up the Soviet Union. Beginning with the foundation, in 1919, of the Ukrainian Academy of Sciences, new Academies have been set up now in all the 15 Republics of the U.S.S.R.

At first these new focal points of scientific research had as their primary concern problems of direct interest to the economic development of the individual Republics. But this implied a parallel extension of fundamental research. Today these Academies of the Republics make an important contribution to fundamental research.

The Academy of the Ukraine is world famous for its research into cybernetics, solid state physics, geology and physical chemistry. Also widely recognized is the work on astrophysics being undertaken at the Academy of Armenia and research into theoretical mechanics at the Academy of the Georgian Republic, the research into the chemistry of alkaloids at the Uzbekistan Academy, the geological research of the Kazakhstan Academy, the petro-chemical studies of the Azerbaijan Academy, the work of the Academy of Latvia on organic synthesis, etc.

The Academies of the Republics play a large part in solving particular regional problems. Those of Central Asia pay special attention to the scientific culture of cotton crops, the study of deserts and their exploitation and seismological problems.

One of the prevailing characteristics of Soviet science is the close link that has been established between fundamental research and the resolution of economic problems of a practical nature. For their part, those scientific organizations that serve the various specialized sectors of the economy participate widely in helping to solve the great problems of science.

During Lenin's lifetime, a series of research institutes was set up devoted especially to the development of industry, transport and the electrification of the country. Today, these same institutes are continuing the job on a much broader front. Agriculture, medicine and education have their own Academies. The 800 or so establishments of higher education within the U.S.S.R. also carry out research covering a wide field.

This has made it possible to develop research work across the entire spectrum of modern science, and has resulted in a whole series of spectacular discoveries and scientific achievements. This is not the place to attempt to list them all, but I would like to mention the brilliant successes of Soviet mathematics, discoveries in the field of radio-electronics, Soviet contributions to the theory of solids, the theory of resistance, aerodynamics and mechanics.

In chemistry, I am thinking particularly of the development of the theory of chain reactions, contributions to organic chemistry, and the chemistry of elementary organic combinations. Soviet scientists have shown the way towards the peaceful uses of nuclear energy and have enunciated the basic principles for the ultimate achievement of controlled nuclear reactions. ■



Photo © APN

THE YEARS OF EXILE

Living in Russia had become too dangerous for Lenin and he was obliged to spend many years abroad, constantly moving from place to place, studying hard, writing and directing the activities of the Bolsheviks in Russia. In May 1908, Lenin went on a trip from Paris to the island of Capri (Italy) to visit his close friend Maxim Gorky to discuss political matters. Above, Lenin (wearing bowler hat) plays chess with Alexander Bogdanov, the Russian philosopher and economist, while Gorki, hand on chin, looks on. Lenin adopted that name while in exile in 1902. Other names he used were: William Frey, P. Petrov, V. Ilyin, Jakob Richter, Ivan and Ilyich. Before

returning to Russia to lead the revolution, Lenin lived in Switzerland, France, England, Sweden, Denmark and Finland. Below left, photo of Lenin taken in Paris in 1910.



Photo © IML Archives



Photo © APN

Above, Lenin snatches a rare moment of relaxation in the mountain village of Zkopane in Poland during the summer of 1914.



EDUCATION key to social transformation

by *Vsevolod Stoletov*

Member of the U.S.S.R. Academy of Pedagogical Sciences and Minister of Higher and Secondary Specialized Education of the Russian Soviet Federated Socialist Republic.

WE must at all costs set out, first, to learn, secondly, to learn and thirdly, to learn; and then see to it that learning shall not remain a dead letter, that it shall become part of our very being and a fully constituent part of our social life."

These words, from one of Lenin's last articles, "Better fewer, but better", reflect the love of learning of the man who has been called "the great headmaster" and his firm belief that knowledge means power.

Lenin inherited his profound respect for and interest in learning from his father who was a talented and well-known educator of his time. In 1869, the year before Lenin's birth, Ilya Nikolayevich Ulyanov was appointed inspector of primary schools in the province of Simbirsk and later he became director of schools with the rank of Councillor of State.

In Simbirsk he was known as "The Liberal" and his sense of responsibility towards the people led him to actions that were at times regarded with some suspicion by his superiors.

As a gymnaziya teacher he refused to take money for working with the poorer students to get them through

their examinations. As inspector and then director of schools he applied himself with great energy to the task of building up the school system in his province. In 17 years he was responsible for the building of 450 schools and doubling the school attendance.

The humanistic upbringing Lenin received from his parents, the example of his father's devotion to his work, his own extensive knowledge of history and his ability to analyse events awakened in him an ardent desire to fight for social justice.

Lenin was convinced that social injustice and social inequality must be abolished before full equality could be achieved. He reasoned that without equality in education there could be neither genuine equality nor genuine democracy. To achieve this genuine democracy he outlined a number of aims, not only in the social, political and economic, but also in the educational fields. As early as 1902 Lenin and his friends declared that they would fight for universal, free, compulsory education for everyone below the age of 16.

Lenin's parents belonged to a

generation of Russian intellectuals who took a passionate interest in the ideas of the great French Enlightenment, the French and English utopian socialists, the writings of the Russian revolutionary democrat Nikolai Chernyshevsky. The works of Robert Owen, Saint-Simon and Charles Fourier were the manuals of Russian intellectuals in the 1860s.

Lenin's own views on education and his pedagogical principles also stemmed from the teachings of 18th and 19th century philosophers with their distinctive tone of historical optimism and moral courage. He saw the aim of economic, social, scientific, technological and cultural progress as being "the humanizing of the environment" and ensuring for men a harmonious and intellectual development.

His programme of social transformation was, therefore, closely linked with education. He realized that the new state could only be built if everyone was aware of the greatness of the goal. For this it was necessary to elevate man, to free him from the grip of ignorance, poverty and servitude. And the first step was to wipe out illiteracy.

As Russia entered the 20th century,



Far left, Lenin (carrying umbrella) in Stockholm on the way to Russia via Finland following the February 1917 revolution which overthrew the Czar. But once back in Russia, Lenin was forced into hiding again by the Kerensky provisional government. Left, Lenin disguised as worker Konstantin Ivanov used this pass to get to the Smolny Institute from where he directed the October revolution.

Photo © APN

Below, Lenin and his wife Nadezhda Krupskaya after the National Conference of 1919 against illiteracy. Nadezhda Krupskaya played a major role in forming Soviet educational policy.

Photo © IML Archives - Revolution Museum, Moscow





Photo left, Lenin (in centre, under lamp) presides as chairman of the first government of Soviet Russia—the Council of People's Commissars—which was formed at the Second All-Russia Congress of Soviets, the day after the October revolution. The first major decrees on Peace, Land and Nationalization were followed by further decrees on education and the preservation of libraries and monuments and the opening of the universities to the workers, etc. In 1919, the famous decree on the elimination of illiteracy was promulgated.

EDUCATION (Continued)

'Economize on everything except education'

80 per cent of her population between the ages of 9 and 50 was illiterate. In the provinces, especially in central Asia, the far east and north, literacy was practically nil (Tajiks 0.5 per cent, Kirghiz 0.6 per cent, for example). In discussing this situation Lenin himself wrote: "there is no other country in Europe so barbarous in which the masses are robbed to such an extent of education, light and knowledge . . . No other country in Europe has remained in this condition; Russia is the exception."

Arguing with his political opponents on the eve of the Great October Revolution, Lenin wrote "We are not Utopians." And he went on to say, "We know that an unskilled labourer or a cook cannot immediately get on with the job of State administration." He firmly rejected the view that "only the rich, or officials chosen from rich families, are capable of administering the State, of performing the ordinary, everyday work of administration." Both unskilled labourers and cooks, Lenin said, are capable of learning to administer the affairs of society provided that they get a good education.

LENIN focussed his attention on universal education literally the day after the workers had seized political power. Decrees concerned with land, peace, the nationalization of financial institutions, the railways and heavy industry were immediately followed by laws on education.

The decree "On the setting up of a State Commission for Education", published on November 22, 1917, defined (as did also a number of subsequent laws enacted in 1917 and 1918) the main principles underlying the structure of the educational system and its democratic management.

On the eve of the October revolution, Lenin's wife and close collaborator, Nadezhda Krupskaya, wrote, on his advice, a book entitled "Education and Democracy" which was also to serve as a basis for the new educational system in Russia.

Under the new order, research institutes, libraries, publishing houses, newspapers and periodicals, museums, picture galleries, theatres, conservatoires, the radio etc., were all enlisted to help schools of all levels in the task of spreading knowledge.

The Red Army became a vehicle for imparting education. A network of courses, classes, faculties and study groups was set up throughout the country to teach people to read and write. The watchword of the day was: "If you know how to read, teach your neighbour." "Workers faculties" were organized early in 1919 to help workers, peasants and soldiers whose secondary education was incomplete to join higher educational establishments. Within a short time they were established in all universities and institutes.

At the third All-Russia Congress of the Soviets, on January 31, 1918, Lenin declared that all scientific and technological achievements would become the property of the people and be placed at their service. This was an official declaration and in later speeches and articles he stressed that the scientific knowledge of the intelligentsia should be fused with the initiative, energy and effort of the masses.

The decree "On the setting up of a State Commission for Education" and later documents, laid down the basic principles for the administration of educational establishments; it was to be based on co-operation between teachers and the general public.

In the early years the Soviet educational system demanded enormous

sacrifices on the part of the people and the state. The young Republic was beleaguered on all sides by foreign armies and a large part of its territory was occupied by the enemy.

Counter-revolution and espionage had assumed enormous proportions within the country. Industry, agriculture and transport were in havoc, millions were starving and mass epidemics ravaged the country.

Nevertheless, the underlying principles of the educational system were shaped in those grim days. The slogan of the moment was: "Economize on everything except education; economize on everything for the sake of education."

BETWEEN 1917 and 1928, construction of 7,780 new primary and secondary schools was completed or begun. Though battling with its many enemies, with disease, hunger and devastation, the government organized universities in Voronezh, Nijni Novgorod (now Gorky), Irkutsk and Samara (now Kuibyshev). A few years later the Byelorussian, Yaroslavl, Turkestan and other universities were founded.

Russia was well down amongst the developed countries with regard to the number of university students. In 1914 there were only 8 students per 10,000 of the population in Russia as compared with 34 in the United States and 16 in Germany. In 1914, Russia's student population was 127,000 whereas in 1968/69, 4,470,000 students attended the country's higher educational establishments.

Considerable changes were made in the geographical distribution of academic institutions. Before 1917, more than half of these were in Moscow and Petrograd. There was only one higher education establishment outside



In 1918, on the first anniversary of the October Revolution, Lenin unveiled a memorial plaque in the Kremlin wall which bears the inscription, "To those fallen in the fight for peace and brotherhood of peoples". At that time Lenin paid much attention to what he called "monumental propaganda". This was the first of many plaques, obelisks and other monuments erected during Lenin's lifetime.

the present Russian Federation and Ukrainian Republic. On the eve of the Second World War there were 146, including 46 in the Transcaucasian Republics, 47 in the Central Asian Republics and 20 in Kazakhstan. Many higher education establishments were opened in Siberia.

Today there is not a single Republic, territorial or regional centre without at least one of the country's 794 institutions of higher learning. The Soviet student population includes representatives of practically all the 100 different nationalities living in the U.S.S.R.

There have also been considerable changes in the social structure of the student body. In 1914, students from the privileged classes accounted for 58 per cent of the student enrolment in ten universities (34,500 students). Workers were listed under the heading "others" and the share of these others amounted to only 2.8 per cent. In five higher technical institutions students from the privileged classes accounted for 41.3 per cent (9,300 students) and "others" for 4.6 per cent. A year after the October revolution Kazan university still had more than 1,000 students from the privileged classes, but there were already 135 students from the urban and rural working class and 439 of farmer origin.

The government took further steps to make the student population a genuinely democratic one and the process took about ten years. In 1930, 45.9 per cent of the student population consisted of workers and their children, 19.4 per cent of peasants and their children, 30.3 per cent of office workers and intellectuals and 4.4 per cent of other categories.

The principals of Soviet universities attempt to make the social structure of the student body reflect the social structure of the whole population. It was with this in view that one-year preparatory courses were set up at many higher education establishments in 1969.

The quality of instruction in the big cultural centres improves more rapidly than it does in rural schools and in schools in the new industrial districts. As a result pupils from the latter schools find it difficult to compete with pupils from the big cultural centres in the qualifying entrance examinations. The preparatory courses are intended to do away with this distinction and to provide equal conditions for all young people wishing to acquire a higher education, irrespective of their place of domicile.

By 1965, the student population of the U.S.S.R. had multiplied 28 times as compared with 1914 and the academic staff 33 times. But this was not only a quantitative growth. Lenin was anxious that there should be no break in the continuity of scientific and cultural development and he ensured that full use was made of the old Russia's academic staff amongst whom were many scholars of world renown. He maintained that socialist science and culture would emerge through the creative assimilation of the scientific and cultural achievements of preceding generations.

It was this continuity that Lenin sought to ensure when he laid down the attitude that the proletariat, now at the helm of state, should adopt towards the intellectuals of the old Russia. He called for active participation of all scholars educated in old Russia in the life of Soviet universities and institutes and insisted that no artificial barriers should be erected between the old and the new scholars. Comradely co-operation should be established with the old professoriate who should be allowed to participate in research and for whom adequate living conditions should be provided.

Lenin's attitude towards the older scholars bore ample fruit and the majority of them played their part in helping to develop the educational

system and in training young research workers.

Nowadays most countries endeavour to give at least an elementary education to the entire population. Without it modern industry and agriculture would be impossible to maintain. Literacy for the entire population is the first step in the abolition of the "knowledge monopoly."

The second step is universal compulsory secondary education and some developed countries have already reached this stage. The third stage is to put higher education within the reach of all those wishing to acquire it and capable of benefiting from it, and the final stage is the elimination of all distinction between physical and intellectual labour.

Nobody nowadays any longer doubts that the aims of these first and second stages are attainable, but with regard to the third and fourth stages the old argument is still being advanced that people are "biologically unequal" for hereditary reasons.

Soviet scholars work on the assumption that, provided their parents are healthy and lead a normal life, all people are endowed with equal abilities. A healthy childhood must be ensured for all and children must be provided with the material conditions for education, rising from one stage to another.

In other words there must be social justice, equal access to the achievements of the human intellect and equal conditions for growth and development. Equal education, therefore, forms a significant part of that social justice for which Lenin fought throughout his life.

Speaking about this aspect of Lenin's work, Albert Einstein said: "I respect in Lenin a man who, with complete self-forgetfulness, gave all his strength to the cause of social justice. . . one thing is irrefutable—people like him uphold and renew the conscience of mankind." ■

Lenin and cultural rights of minorities

by
Lauri A. Posti

Professor at the Faculty
of Philosophy, University
of Helsinki (Finland)

IN the early days of the Soviet Union, nationalities policy questions were vitally important, since national minorities comprised over 50 per cent of the entire population. In Czarist times, these minorities were subdued and oppressed in many ways.

As many of them had never had a literary language, it was most difficult to make just arrangements and help to raise their cultural standards. The scattered examples of literature written in certain native languages consisted mainly of religious books. The minority nationalities were mostly illiterate. Under the Czars, only about 26 per cent of the whole population was literate; among some nationalities, not even 1 per cent were literate.

As a schoolboy, Lenin was already familiar with this problem. He was born in Simbirsk (modern Ulyanovsk) on the Volga, and always had a warm sympathy for the Chuvashes, Mordvians, Tatars and Votyaks (Udmurts), oppressed nationalities who lived in the area.

The many years Lenin spent in exile, often far from his native land, no doubt helped to confirm his conviction of the importance of the nationalities question. He mastered several foreign languages, and, deeply attached as he was to the Russian language and culture, it is obvious that his long stay in foreign surroundings emphasized for him the importance of native tongues.

In his extensive literary output Lenin repeatedly returned to the nationalities question and the importance of native languages and cultures, always stressing that all should have equal importance, even going so far as to suggest that there was no need for an obligatory official language.

In "Is an obligatory official language necessary?", published in *Proletarskaja Pravda* on January 18, 1914,

arguing against the views expressed by the Russian Liberal Party on the language question, Lenin concludes as follows: "Hence, Russian Marxists consider that it is necessary *not* to have an obligatory official language; that the population must be provided with schools and instruction in all the regional languages; and that a basic provision must be included in the Constitution declaring all privileges whatsoever null and void of any particular nation, this annulment also to concern all infringements whatsoever of the rights of national minorities".

Lenin has given his detailed reasons in "Critical Remarks on the National Question" and "The Right of Nations to Self-Determination", books written in 1913 and 1914, which provided the theoretical national programme of the coming revolution.

Soon after the October Revolution in which the Bolsheviks seized power, the Council of the People's Commissars, issued the "Declaration of Rights of the Peoples of Russia", signed by Lenin, declaring its intention of basing Russian nationalities policy on the following principles:

■ The equality and sovereignty of the peoples of Russia.

■ The right of the peoples of Russia to free self-determination, up to and including secession and the formation of an independent State.

■ The abolition of all national and national-religious privileges and restrictions.

■ The free development of the national minorities and ethnographical groups inhabiting the territory of Russia.

In accordance with the second of these principles Lenin, as Chairman of the Council of the People's Commissars, signed the decision at the end of December 1917 acknowledging the independence of Finland, on

the proposal of the Government of Finland. This was an act of statesmanship which the whole Finnish nation gratefully recognizes.

In many earlier statements Lenin, who was well acquainted with conditions in Finland where he had taken refuge several times from Czarist persecution, had expressed the view that Finland was entitled to independence if the Finnish people so wanted.

WHEN conditions finally became settled in the Soviet Union, energetic efforts were made to develop the languages and cultures of national minorities, in accordance with a decision of the tenth Communist Party Congress in 1921, with Lenin as Chairman.

Alphabets and principles of orthography had to be created for languages that had never been written before. Experts had to decide which dialect or dialects should provide the basis of the literary language. This often demanded extensive research.

The sound system of the language had to be scrutinized, and what seemed to be the vital dialect or dialects identified. Specialized terminologies had to be created since they were naturally lacking in languages that had been used only as regional spoken languages.

In devising new alphabets, the Latin alphabet, considered to be the most international, was taken as a basis. A centre was set up to handle the general and theoretical problems, with local committees for the various languages. As many nationalities had no specialists of their own, Russian experts often had to do the basic research. In the interests of unifor-

mity, the Latin alphabet was introduced even in languages that already had some literature published in Russian or Arabic letters.

Towards the end of the nineteenth-thirties, the young literary languages changed over to alphabets based on Russian letters. This change was prompted by the close political, economic, and cultural relations with the Russians and, of course, many non-Russians knew Russian or wanted to learn it. Russian has become by far the most important means of communications between the different parts of the Soviet Union and the different nationalities.

The Russian alphabet has more letters than the Latin but not enough for the needs of all the languages. The accepted principle is that each phoneme, i.e. functionally distinctive sound, has its own character in the orthography.

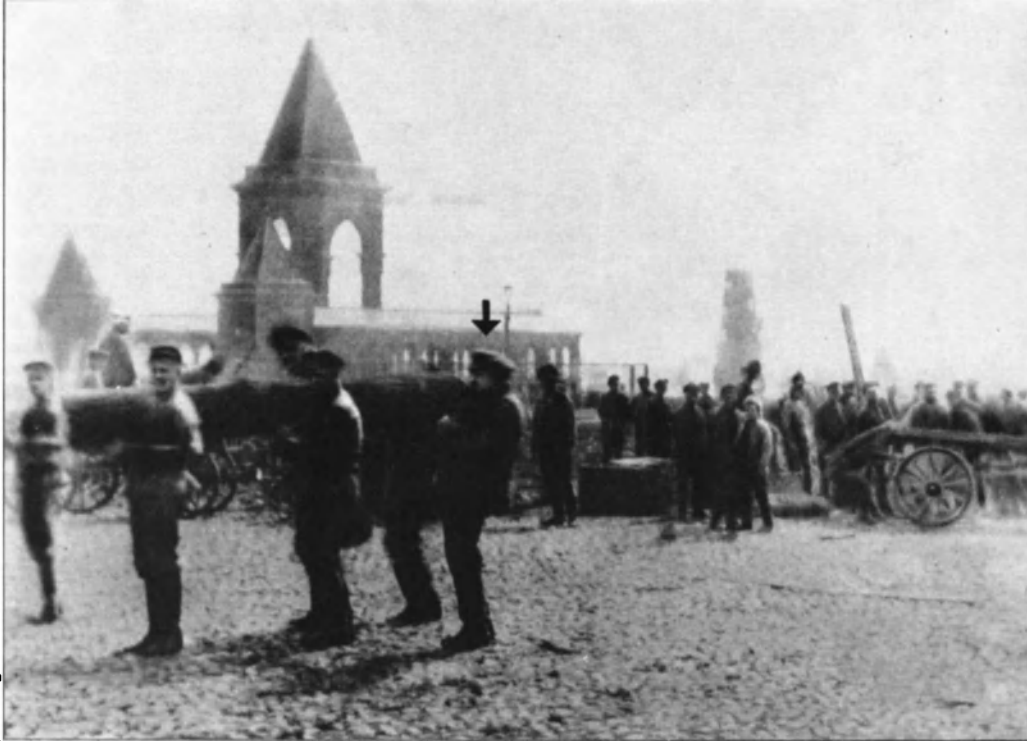
In some of the languages, the phonemes are unusually many. Thus Lezgian (belonging to the Caucasian group of languages) has 60 phonemes, 6 vowels and as many as 54 consonants. Russian has 33 letters; obviously, more characters were needed. They were created by combining additional characters with the basic Russian letters or by borrowing from other alphabets. Some phonemes are indicated by a combination of two characters.

All in all, these new alphabets comprise, in addition to the 33 Russian letters, 55 other characters, i.e. a total of 88 letters made necessary by the desire to keep the phonetic value of each letter about the same in different languages, with new letters for such phonemes as differ phonetically from those of the Russian language. Accordingly, the same characters generally indicate similar sounds in different languages.

In deciding which dialect should be

CONTINUED PAGE 20

Photo © APN



Ravaged by the effects of World War I and the civil war, Russia in 1919 was in chaos. Moscow railwaymen decided to work voluntarily in their free time on Saturday (in Russian "Subbota") to speed up the clearing and repair of the Moscow-Kazan railway line. Lenin welcomed this initiative which he described as "the great beginning". The railwaymen's lead was followed all over the country. Voluntary work of this kind came to be known as "Subbotnik" and each spring up until today the whole population of the U.S.S.R. participates in days of unpaid labour. Above, Lenin (arrow) taking part in the All-Russia Subbotnik in the grounds of the Kremlin in May 1920.

Lenin encouraged scientific and technological advances of every kind. Below, he watches trials of a new type of electric plough, near Moscow, in October 1921.

Photo © APN



Photo © APN



For Lenin, any place could serve as an office and any spare moment was an opportunity for work. Above, Lenin takes notes on the steps of the rostrum at a conference in 1921. While not an educationalist himself, Lenin recognized how vital education was to the country's social transformation.

In old Russia over 80 per cent of the population was illiterate and in the outlying districts literacy was practically nil. On December 26, 1919 the Soviet government passed the decree on the elimination of illiteracy and the great educational and cultural drive began. Below left, a city girl explains the mysteries of the alphabet to a Russian peasant. Below centre, a lunchtime lesson in a factory. Below right, Tajiks from the mountainous Pamir region and, right, Turkmenian women from the deserts of central Asia, attend literacy classes. Before the revolution, literacy among Tajiks was 0,5 per cent and among Turkmenians 0.7 per cent. Today illiteracy has been virtually wiped out in the Soviet Union.



'If you can read teach your neighbour'



Photo © APN

Photo © State Cine-Photo Archives, Moscow





Photo © APN



Photo © APN



Photo © APN

Above, winter at the country house at Gorki, a village just outside Moscow, where Lenin, his health broken by overwork, lived from 1923 until his death on January 21, 1924. Against his doctor's orders Lenin continued working right to the end. During this period he wrote several important works including "Better Fewer, But Better" and "On Co-operation". Below, Lenin seated beside his wife Nadezhda Krupskaya with his sister Anna, his nephew Victor, and a neighbour's daughter Vera, in the grounds of the "dacha" at Gorki in summer 1922.

Photo © APN



made the basis of literary language, the experts took account of the numbers who spoke each dialect and their weight in economic and cultural terms. Phonetic, morphological, and lexical characteristics were next considered, and earlier literature if any. In some cases, where differences in dialects were very considerable, and populations scattered, two literary languages were created.

When creating a new literary language, great attention must be paid to the development of the specialized terminologies lacking in languages hitherto used only as local spoken languages. It was often necessary to resort to loan words mostly of Russian origin, or international words acquired via Russian. Part, however, were native, either borrowed from dialects or derived by the word formation typical of the language. The special committees set up for this work include philologists and experts in the subject matter concerned.

Over fifty nationalities which previously had no literature in their native languages now have literary languages of their own. With many of them, development has been very rapid. Books and newspapers are published in relatively large numbers, and original literature in the native language has made noteworthy progress. Native language schools allow the different nations to produce their own educated classes. The Soviet Union is divided up administratively in such a way as to pay due account to the existence and needs of different nationalities, and this has encouraged the growth of the national cultures.

In some cases all the preparations for developing a literary language were made, but the project was later dropped. This happened when too few people were really involved or interested or else were too scattered, the differences between dialects were too great, or when the people had a good command of Russian or some other important neighbouring language. The incentives to developing or using a literary language of their own were therefore lacking.

All the new literary languages have not been equally popular or equally successful. Obviously, those of small nationalities have not played the same role as those spoken by large numbers of people. The languages used in the administration, in higher institutes, and in research have developed most; the languages of minor nationalities are often used only in primary education. Even so, they have been of great importance to the lives of the peoples concerned.

Learning to read and write is much easier if done in one's own language and, of course, greatly facilitates the spread of literacy. Here the Soviet Union can, with justified pride, refer to really magnificent achievements.

In Tadzhikistan, for instance, in Czarist times, only 2.3 per cent of



Photo © APN

The scene in Red Square on January 27, 1924, the day of Lenin's funeral. At four o'clock on that day all activity ceased for five minutes throughout the Soviet Union and the occasion was also observed in many other countries.

those between 9 and 49 years old were literate; as late as 1926, only 3.8 per cent. The corresponding figures for 1939 were 82.8, for 1959, 96.2 per cent. In Uzbekistan, the percentage in Czarist times was 3.6, in 1926 11.6, in 1939, 78.7 and in 1959, 98.1. Literacy has gone hand in hand with rising standards of education and cultural life, which in turn have afforded access to the science, technology and culture of other nations.

Lenin himself saw only the very beginning of this great process of development. As the whole world is now celebrating the centenary of his birth, it can confidently be said that the principle of the equality of all nations and languages, which was embodied in his nationalities policy, and which has allowed different nationalities active educational and cultural participation, has had a most significant influence on the enormous development that has taken place in both these sectors in the Soviet Union since the October Revolution. ■



Photo © Tass

Above, the provincial Russian town of Simbirsk, now Ulyanovsk, as it was in Lenin's boyhood. Below, the Ulyanovsk of today; part of the memorial centre containing libraries, lecture-rooms, museums, etc., built to commemorate Lenin's hundredth anniversary, and inaugurated on April 16, 1970, by Leonid Brezhnev. The original Ulyanov family home is housed within this modern building.



© I. Denisenko and Y. Yevsyukov - APN

The art and monuments of Java

THE sounds of the gamelan orchestra—the muted thunder of drums, sonorous gongs or tinkling chimes—are heard throughout Java, their music pervading palaces and theatres, squares and even private homes. To the music of the gamelan are enacted the Hindu epics of the *Mahabharata* and *Ramayana*. Children and adults crowd performances and listen enchanted to stories of the deeds of mythical heroes, demon kings, princesses and comic servants.

One form of traditional Indonesian theatre art is the *wayang kulit*, the famed shadow play by puppets made of incised and painted buffalo hide, whose silhouettes are projected on a screen at night. The puppeteer or *dalang* leads the gamelan, sings the songs, narrates the story, and speaks for each character in changing tones and accents.

Wayang, in its widest sense, means a dramatic performance, a play, or a story, whether the actors are puppets or human beings.

Troupes of dancers belonging to private clubs in Central Java also dramatize the great epics in dance plays (*wayang wong*). In addition, professional groups—each one the exponent of a particular style—move from city to city, playing in each to packed houses for two or three months at a time.

Young children soon become familiar with the *Mahabharata* and the *Ramayana*. When the *wayang kulit* is performed they sit or squat in groups before the screen, following with wide eyes the appearance of a prince or a demon. When dancers rehearse they too have an audience of children who frequently try to imitate the movements and gestures of an admired dancer. At home they play on toy instruments themes heard from the gamelan. Moreover, manner of speech, patterns of behaviour, ethical and moral precepts which shape Javanese mores are, to a considerable degree, learned in childhood at performances of the *wayang*.

In the countryside, around the city of Jogjakarta are found the temples dedicated to the Buddhist and Brahmanic faiths. Built of volcanic stone their dark grey masses loom over rice fields and dominate nearby villages, repeating the rhythm of surrounding volcanic peaks and ridges, silent reminders of a past civilization whose beliefs still affect the lives of the people today.

CONTINUED PAGE 24



Photo © Roger Viollet, Paris

by
Hiroshi Daifuku

Photo Unesco - David Davies



The mighty temple complex of Loro Djonggrang, at Prambanan, ranks as one of Indonesia's most magnificent monuments. Built in the 10th century A.D. it originally comprised over 220 temples, sanctuaries and other buildings. Above, one of its smaller sanctuaries viewed from the great temple dedicated to Shiva. Balustrades on the Shiva temple carry vividly sculpted scenes from the great Hindu epic, the Ramayana (see "Unesco Courier" special issue, December 1967). They relate how Rama, helped by an army of monkeys, sets out to rescue his wife Sita after her abduction by Ravanna, king of Lanka. Right, a courageous bird, Jatayu, carries Sita's ring to Rama and tells him where she is held captive. Left, another scene from the Ramayana carved on the temple of Brahma, flanking that of Shiva.



Photo Unesco - David Davies

THE GROTTA OF THE HERMIT

At the foot of the Wadjak mountains near Tulung Agung, Java (site of the discovery of the remains of Wadjak Man, a type similar to Neanderthal Man) is a hermit's cave hewn from the solid rock. Its walls are decorated with reliefs illustrating episodes from the story of the mythical hero Ardjuna, and his temptation by nymphs sent down to earth by Indra, god of the sky, to disrupt his meditations. Right, nymphs descend from the abode of the gods and alight near a stream. Far right, boatmen shouldering their oars approach the grotto where Ardjuna meditates. (Ardjuna himself is not shown in this photo).

Photos © Louis Frédéric Rapho Paris



ART OF JAVA (Continued)

Great scenes from the Ramayana

Thus, though they are no longer religious centres, their associations with the cultural life of the people—through music, dance and the theatre—are ever present and thus make them living rather than dead monuments.

The beginning and growth of Hindu culture in South East Asia is still not perfectly known. Archaeological discoveries of stone and metal inscriptions, dating from the beginning of the 5th century A.D., show that Indian influence had already reached the archipelago. Small states existed, based on Indian patterns, which traded with India and China and with each other, and waged war among themselves.

Gradually a dominant state evolved. Mataram, as it was known, gained control of Central Java during the 8th century and built the first temples on the Dieng Plateau, dedicated to Shiva. Buddhist missionaries probably came a short while later.

During the latter part of the 8th century a new dynasty appeared, the Sailendra, which controlled most of Java and Sumatra. Much of what is known of Central Java during this period is derived from the many monuments constructed by the different kings of this dynasty.

Borobudur (see the "Unesco Courier", June 1958 and June 1968) is the best known of these monuments. Besides carvings treating the religious aspects of Buddhism, many panels give an indication of the life of the people during this period.

A caparisoned elephant standing near a prince and princess indicates its use as a steed. Musicians play on flutes, drums, cymbals and rattles while a dancer's gestures—carved in stone centuries ago—could easily be those of a dancer today. A high-prowed, two-masted ship under full sail laden with passengers and cargo reveals the level of seamanship achieved in south east Asia during this period.

Three kilometres from Borobudur is the temple of Mendut. Within it stands the famed statue of the "Preaching" Buddha, flanked by a statue of the Bodhisattva of Mercy, Avalokiteshvara, to its right and the Bodhisattva of Power, Vajrapani, to its left. They are, says the Netherlands archaeologist, A. J. Bernet-Kempers, "one of the greatest manifestations of Buddhist spiritual thought and art... There are few, if any, groups of statues anywhere else in Buddhist countries which can compete with them."

On the wings of the flight of steps are carved parables (*jatakas*) based on folk tales such as the story found in many other East Asian countries of a talkative turtle who begged a pair of geese to take him on a flight. On the panel, the turtle is shown suspended by its mouth from a stick held between the two birds. As people make fun of him the turtle opens his mouth to reply, falls, and is killed by the onlookers.

The "tree of heaven" carved on the

sides of Mendut and nearby Pawon recalls the silhouette of the *gunungan*, the carved leaf-shaped buffalo hide which is used to signal the opening and closing of the *wayang kulit* puppet play to indicate changes of scenes, forests, and in general to symbolize the entire ritual of the *wayang*.

Guardian figures found at temples such as Kalasan, Sewu and Sari, massively sculptured, with heavy stone clubs, protect the entrances from evil. Their benign features are in contrast to the more demonic countenances found in such figures in temples of the other Asian countries. The tradition continued until recent times and many of the palaces of Central Java have had such figures added to the entrances of the grounds.

The varying styles of architecture, the carved statues of pilgrims, Bodhisattvas, royal personages, all testify to the wealth of the civilization as well as to the dedication of the Sailendra rulers to Buddhism.

Accounts of pilgrims and travellers to the Java of this period give some indication of the wealth and political importance of the Sailendra Dynasty. Apart from the stone temples and the scenes they portray, little remains of this former glory for most of the domestic architecture was built of perishable materials, such as wood which is rapidly destroyed in the humid monsoon climate.

Labour and materials to build all



these structures must have been contributed by the great mass of the people, who also served in the armies of the kings, engaged in commerce, and otherwise produced the wealth which made possible the activities of the State.

It is also probable that many indigenous beliefs—antedating the introduction of Hinduism and Buddhism—persisted, as indeed they do today. The worship of Shiva also probably continued throughout the Sailendra period and some authorities suggest that the attributes of Shiva and Buddha may have been combined.

In the latter half of the 9th century, construction was begun of the temples dedicated to Shiva, Brahma and Vishnu. This complex of temples, known as "Loro Djonggrang", at Prambanan, rivals Borobudur in conception. Traditionally it is identified with the Mataram kingdom at the close of the Sailendra period.

It seems to have been gradually abandoned when the capital of Mataram was transferred to Eastern Java and the temples were finally destroyed by an earthquake in 1549. For centuries they lay forgotten with only low brush-covered mound hinting at their presence. Excavation revealed the importance of the site and it is being slowly restored.

The visitor today comes upon fragments of the outermost wall which is built in a square, with each side 390 metres (1,300 ft) in length. The complex of temples and shrines are found within two inner, concentrically walled enclosures. The square walls are oriented north to south with gates

at each of the four cardinal points of the compass. Within the central court are found the principal temples surrounded by a wall 110 metres (360 ft) square. The intermediate court originally had 224 minor temples, most of which are in ruins, surrounded by a wall 222 metres (730 ft) square.

The central temple dedicated to Shiva towers 47 metres (155 ft) above a narrow balustraded terrace. It was carefully restored between 1937 and 1953. However, it was not possible to complete the roof, and today the statue of Shiva stands in the open silhouetted dramatically against the sky. The builders of the temple combined several Indian styles with Javanese elements into a single harmonious architectural composition. Matching it in beauty are the temples dedicated to Vishnu and Brahma, to the north and the south of the temple of Shiva.

Of more immediate interest to the present-day culture of Java, however, are the dancing figures sculpted on the balustrades of the temple, and above all the scenes from the *Ramayana* on the interior of the balustrades. Carved in stone, they record the battles of Rama, the feats of Hanuman the monkey general, and all of the legendary characters and scenes with which the Javanese and Balinese are so familiar through their theatre and dance. The scenes from the *Ramayana* are continued on the neighbouring temple dedicated to Brahma. These ancestral carvings are studied and serve as standards of comparison for the dancers of today.

Because of this an amphitheatre has been built nearby and during the full moon of the dry season (June -

September) annual performances of the *Ramayana* are given by different dance groups, coming not only from other localities of Indonesia, but at times from neighbouring countries.

The Islamic religion was introduced into Indonesia by Indian traders during the 13th and 14th centuries. The religion had already been modified by Indian influences and as it was gradually adopted—rather than being imposed by conquest—acquired distinctive Indonesian characteristics, including a marked tolerance for surviving elements of Hindu religion.

In Central Java the oldest Muslim monuments are found on the north coast. The best known is the minaret of Kudus near the city of Semarang. It is not monumental in scope, but is historically important, and in form it resembles the Balinese drum tower or *kulkul* rather than Indian models.

An outstanding example of aristocratic Indonesian Muslim architecture exists in Jogjakarta. It is largely in ruins today, but traces of its former glory exist. The pleasure palace of the Sultan, Taman Sari (or "flower garden") was once located on an island in an artificial lake which was reached either by boat or a tunnel leading to the island from the shore. Today the island is a low hill surrounded by garbage as the former lake now serves as a dump.

The old tunnel, its moss covered walls and shafts letting in air and sunlight, bears mute witness to its former role. One of the outer gates, surrounded by nondescript housing, still stands with crumbling masonry. Behind it lie tanks or basins, partially filled with silt, but children can still play

in them. Traces of old canals exist and the lavish architectural plan calling for a lake, fountains, and pools, have also earned it the name of the "water palace". The design of Taman Sari differs strikingly from the lighter wooden construction used for later aristocratic buildings.

The Summer Palace of the Sultan and the palaces of the Prince of Solo and other members of the old Javanese aristocracy offer another type of architectural style which is much more Far Eastern in concept. Here are courts shaded with trees, low lying pavilions, quarters for servants, etc. Within the walled enclosure the most important building is the front pavilion where gamelan concerts are given, and dances practised.

In the palace of the Sultan, now open to the public as a museum, is one of the most important collections of gamelan instruments. In other princely houses of the city of Jogjakarta, dance groups composed of the youngsters from aristocratic families and children from homes in the city and surrounding countryside are trained. At all such dancing lessons, crowds of youngsters gather to watch and thus learn the movements of the dance and the modes of behaviour considered to represent the ideal.

Thus, in Central Java today and in other regions of this populous island, the formal classroom lessons of contemporary civilization are tempered with those learnt from the religious and moral heritage and from the ancient monuments of the past.

It is not possible at present for the government to consider financing the restoration and conservation of all of the monuments of Central Java, irrespective of their importance to the cultural heritage. At Sewu, for example, most of the shrines are tumbled heaps of dressed stone. Some, by the painstaking process known as anastylosis (the fitting together of pieces like a gigantic jigsaw puzzle) have had their component parts identified and partially reassembled, but not restored, due to lack of funds.

Together with the monumental sites described above, Central Java can offer to the visitor a unique experience and perspective of the growth of civilization in south east Asia which, for much of the world, is still largely unknown.

Central Java is heavily populated and is largely agricultural. Measures to meet pressing social and economic needs have priority. The drive to finance the restoration of Borobudur, being launched by Unesco, will not in itself contribute to the well-being of the local people.

Unesco, however, is aiding the Government in planning a programme for the development of cultural tourism which will help to justify the costly programme required for the conservation of the site and monuments, and at the same time open new economic possibilities for the people. ■



Photo © A.J. Bernet Kempers

CHARITABLE HARE. — Disguised as a Brahman, a god visits four animal friends—an otter, a monkey, a jackal and a hare—and begs for alms. Each offers the holy man some food, but the hare (none other than the Buddha in one of his earlier lives) having nothing else to offer, is ready to sacrifice his own body—the ultimate example of charity. This relief (800 A.D.) is one of 600 illustrating Buddha's birth stories, on the galleries of the great Borobudur temple on the island of Java.

THE "Jatakas", or birth tales of the Buddha, comprise 547 stories in prose and poetry. They are believed to have been written about the 5th century A.D., based on an earlier version in Pali, itself inspired by even more ancient writings, possibly dating from the 3rd century B.C. These tales of the Buddha's previous lives show how, before the final incarnation in which he attained Enlightenment, the Buddha had been reborn innumerable times as an animal—as a monkey, an elephant, an antelope, a stag, a horse, and many others. Ancient Buddhist art, taking its themes from the Jakata stories, has depicted a graceful cavalcade of beasts of every kind, as in these sculptured scenes from Java's monuments.

STORIES IN STONE



Photos © A.J. Bernet Kempers, Arnhem, Netherlands

MONKEY HERO. — The King of Benares seeks and finds a tree covered with luscious fruit growing by a river. Seeing a troop of monkeys devouring the fruit, he orders his archers to shoot the animals down. The chief of the monkeys (the Buddha) rescues his people by making a bridge across the river with a long rattan and his own body. When the last monkey has passed, the exhausted chief monkey lets go and is on the point of falling into the water when the king, moved by such self-sacrifice, spares his life. (Borobudur temple relief).



TALKATIVE TURTLE. — A turtle asks a pair of geese to take him on a flight. Gripping in his mouth a stick held by the birds he rises into the air. As the people below mock him and try to shoot him down, he opens his mouth to return their abuse, falls to the ground and is killed. This ancient story is one of the Fables of Bidpai, the name under which a famous collection of fables of Indian origin became known in Europe in the middle ages. The original Sanscrit work, composed by a Brahman in the 3rd century A.D., is still highly popular in India as the "Pancatantra". The fable of the turtle, which inspired one of the well-known fables of La Fontaine, is depicted here on a relief in the Chandi Mendut temple, Java (800 A.D.).

Photo © Louis Frédéric - Rapho

GOOD-HEARTED DEER. — A huntsman pursues a deer through a forest, but just as he reaches it, he falls from his horse into a ravine. Immediately, the deer turns back and, lowering its antlers into the ravine, rescues the huntsman, who vows he will never again kill a deer. This relief, from a Borobudur balustrade (800 A.D.) shows, from left, the horse, the hunter in the ravine, and the deer.



Photo © Th. Van Erp



IMPRUDENT WEAVER BIRD. — A weaver bird scoffs at a monkey, saying "you cannot even make a nest to live in." Stung to retaliation, the monkey tears apart the ingeniously-contrived nest of the weaver bird, to prove that other animals have other skills. This decorative relief on the Chandi Mendut temple illustrates one of the stories from the old Javanese version of the Indian Pancatantra legends.

RESOURCEFUL GOAT. — A story from the Pancatantra has become a famous fable in Java. A monkey offers to lead a tiger to where a goat is living, and lashes itself to the tiger's back with a rope. Seeing them arrive, the goat shouts to the monkey: "Thank you for bringing me a tiger to eat, but where are the other nine you promised me?" Hearing this, the tiger panics and dashes off, dragging the monkey behind him... (Chandi Mendut temple, 800 A.D.).



Hunting clues to an ancient supercontinent

by Daniel Behrman

Recent studies in oceanic geology have thrown new light on the theory of continental drift, according to which the sea floor has spread out over eons of time pushing the continents apart. The process continues today as undersea volcanic activity forces lava up from volcanic vents and fissures in the mid-ocean ridges that girdle the world. Photo right shows lava formations (pillow lava) formed when the molten substance cools rapidly into the shapes seen here. Photo was taken on the Mid-Atlantic ridge at a depth of 3,000 metres (10,000 ft) by the French oceanographic vessel "Calypso". Scientists used a camera sled capable of operating at a depth of 8,000 metres. Far right, ocean floor at a depth of 4,600 metres (15,000 ft) shows bell-shaped sponge being deflected by deep current. In this photo, taken by a U.S. oceanographic expedition 200 miles from Bermuda, needle of compass attached to equipment indicates direction of the current.



Photo © Requins Associés, Paris

I NTEREST is growing among marine geologists and geophysicists in international co-operative research to solve the enigmas that are now raised by the western coast of Africa.

It is here, according to some current theories, that the primordial supercontinent, Pangaea, began to break open more than 100 million years ago along a rift that was to become the Atlantic Ocean. From the western hump of Africa, what is now the Atlantic seaboard of the United States was split off.

And there lie the enigmas. The continental margin of North America is perhaps the best known in the world to marine geologists; that of the western coast of Africa is certainly among the least known.

This knowledge gap can be best

DANIEL BEHRMAN, author of *"The New World of the Oceans"* (Little, Brown and Co., Boston, U.S.A.) is a Unesco science writer.

closed, scientists believe, by investigations involving not only the world's leading oceanographic nations but also the developing countries along the African coast.

Such was the trend of opinion at a recent symposium organized in the United Kingdom at Cambridge University by SCOR, the Scientific Committee on Oceanic Research of the International Council of Scientific Unions. SCOR serves as scientific adviser to Unesco's Intergovernmental Oceanographic Commission that has already co-ordinated a number of co-operative investigations at sea.

The symposium brought together no fewer than 206 scientists from eighteen countries. They spent an intensive week of talking, working, eating and living together under one roof in the relative isolation of Cambridge's new Churchill College, a long mile from the centre of the town.

The subject of their meeting was

"The Geology of the East Atlantic Continental Margin", taking in the coast of the Atlantic from Novaya Zemlya, the Soviet archipelago in the far north, to Cape Agulhas on the southern tip of Africa.

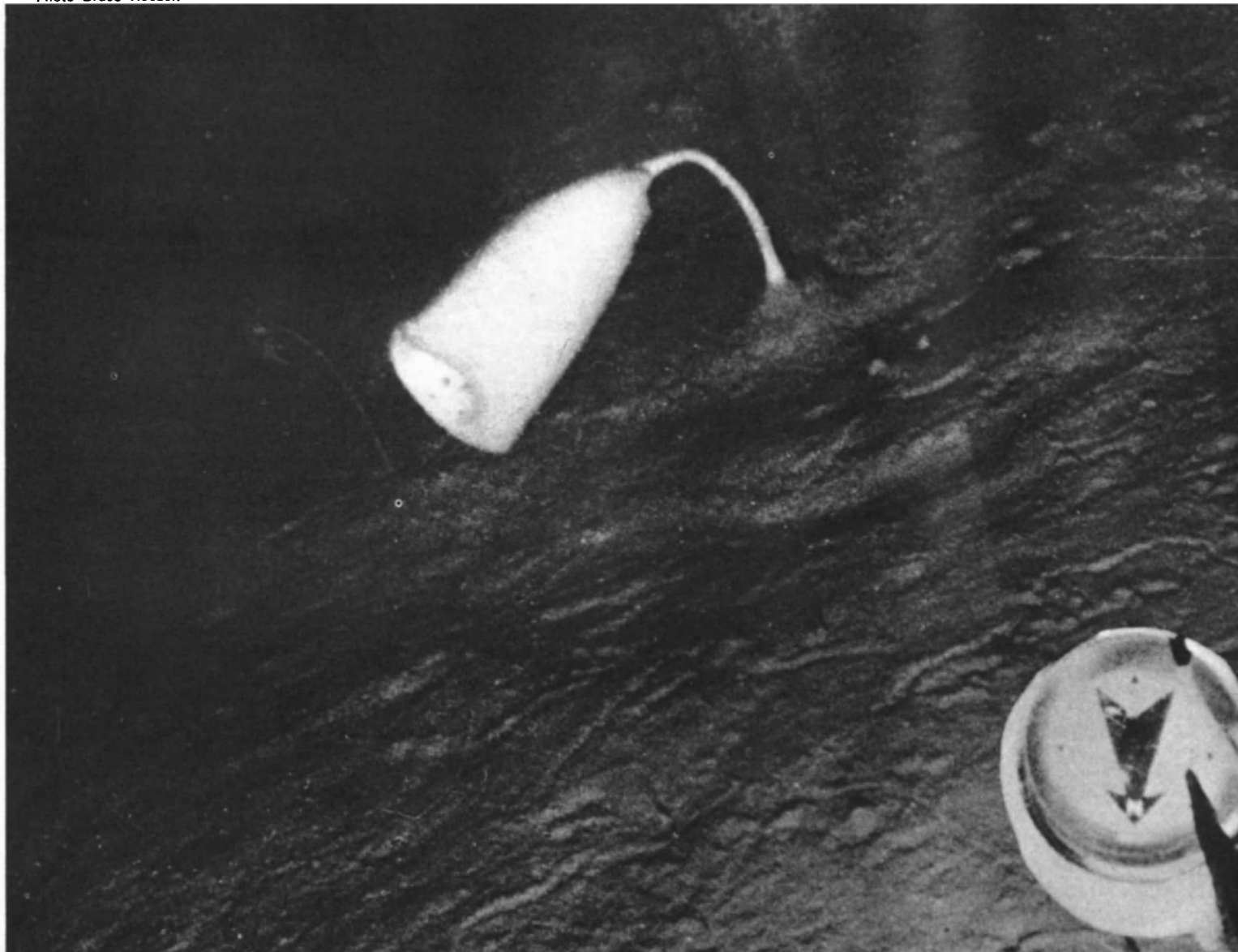
"Continental margin" is the term that oceanographers use to describe not only the continental shelf but also the slope and the rise that separate the shore from the floor of the deep ocean.

The subject of the meeting was also attractive enough to lure scientists from thirteen companies prospecting for oil and mineral resources and one currently mining diamonds from the continental shelf.

The symposium showed that exploration of the northern and the southern tips of the east Atlantic shoreline is well under way. As for the coast of western Europe, it is being intensively studied under the spur of natural gas finds in the North Sea and oil pros-

CONTINUED NEXT PAGE

Photo Bruce Heezen



The Aladdin's cave under the sea

pects in the Bay of Biscay. But co-ordination is still needed so that, as one scientist put it, geology on the continental shelf will not become as difficult politically as geology on the continent.

South of the Bay of Biscay, coverage begins to thin out. This is all the more unfortunate because it is here that many problems originate.

Geologists now tend to regard the earth's surface as a number of "plates"—as many as nine. These plates are moving, driven by the new material that surges up from the mantle below the earth's crust to spread out from the mid-ocean ridges, thus forming new sea floor.

Action comes on the edges of these plates, and the line running from Gibraltar to the Azores is one such edge. South of this line, it is believed that the sea floor is spreading much "faster" (30 millimetres more a year) than to the north. On both sides of the line, therefore, the Atlantic continental margin needs to be investigated so as to determine the consequences of such a grinding displacement.

Then, further to the south and around the hump that starts with Morocco, there is the Y-junction where Europe, America and Africa may have been joined in Pangaea. If so, then how did they break up? The answer could be buried under the bottom of the Atlantic in the continental margin off Africa.

The Cambridge meeting was told of a proposal to send one of the world's best-equipped research vessels, the 1,100-ton *Atlantis II*, operated by the Woods Hole Oceanographic Institution, at Cape Cod on the U.S. east coast, to work in several areas off Africa.

Details of the proposal were given by Dr. K. O. Emery of Woods Hole, who has been responsible for an extensive survey of the continental shelf on the other side of the Atlantic off North America.

If funds are voted for U.S. participation in the proposed International Decade of Ocean Exploration, there is a possibility that *Atlantis II* could survey 10,000 kilometres of the African coast, Dr. Emery stated. Every 200 kilometres, she would run a line out from the coast, over the shelf, the slope and the rise, using such techniques as seismic profiling, gravity and magnetic measurements and precision charting of the bottom.

The proposal was welcomed because knowledge is particularly scanty about

the continental slope and rise out from the shelf (which ends legally at the 200-metre depth line). German and English scientists at the meeting said they could co-operate in such a survey by sending scientists to join the research team aboard the ship, or by working up data. Dr. Emery said it was hoped that scientists from African countries would be able to work aboard *Atlantis II* too.

ON the western European end of the continental margin, scientists feel that no such broad reconnaissance is needed. Instead, they consider that small symposia could discuss specific areas such as the Bay of Biscay or the Rockall plateau.

The Rockall plateau came in for a share of attention too at the Cambridge symposium. It lies in the Atlantic about 450 kilometres (300 miles) northwest of Ireland, yet is believed to be of continental rather than oceanic origin. Seismic refraction surveys made by geologists aboard the British research vessel *Discovery* show the earth's crust to be 31 kilometres thick there (under the ocean, the crust is only about a third as thick).

The Rockall plateau may have been marooned far out to sea by three separate splits of Pangaea: first, Europe from America, then Greenland from Europe, finally Rockall from Greenland.

One's impression at a meeting of marine geologists is that the ocean bottom seems to move almost as much as its top. It can move vertically, too: the symposium was told that the North Sea is subsiding under a load of sediments 7,000 metres thick, at a rate of one centimetre every 300 years.

Such sedimentation is a good indication of the presence of hydrocarbons, whether oil or gas. Along the east Atlantic continental margin, exploration for petroleum is being carried out by 10 countries in Europe and twenty-three in Africa.

In the North Sea off Britain alone, over sixty companies are working on 23 concessions. Off the west coast of Africa, thirty-five companies have acquired or are applying for concessions. The biggest find here has been the offshore Nigerian basin which, it was reported, would have produced a million barrels of oil per day last

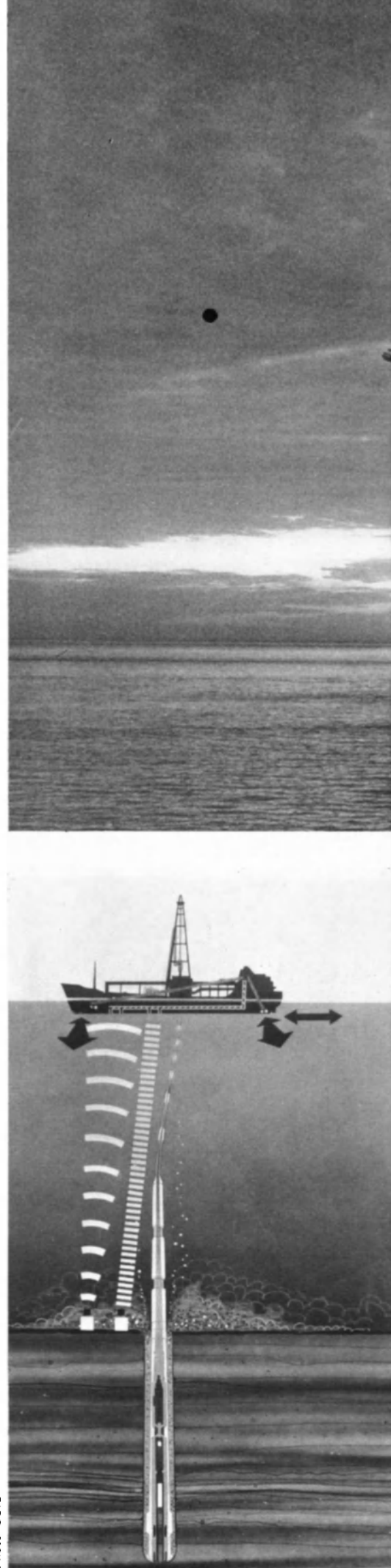


Photo USIS



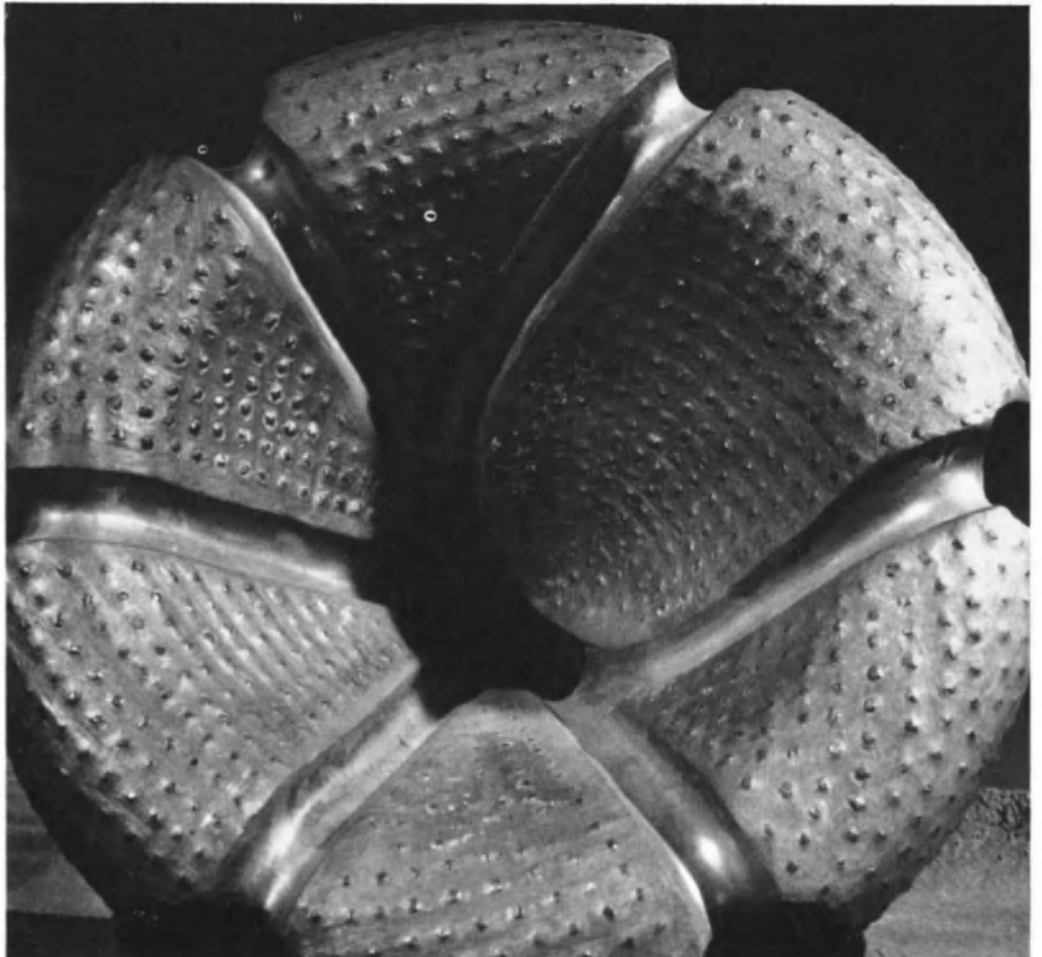
BLACK GOLD FROM THE OCEAN BED

Man has only recently begun to exploit the vast resources that lie on and beneath the ocean bed. So far, harvesting this wealth has been confined to continental shelves in waters less than 100 metres (350 ft) deep and within 100 km (70 miles) of the coastline. Currently, oil, gas and sulphur are produced by drilling; coal and iron ore from mines driven from land; heavy minerals tin and diamonds by dredging; fresh water, salt, magnesium and other minerals from seawater. Oil and gas represent more than 90 per cent by value of all minerals obtained from the oceans thus far. Left, offshore drilling platform working through 80 metres (250 ft) of water in the Gulf of Gascony, France. Petroleum engineers use the diamond studded steel drill shown below to obtain samples from the sea bed as they prospect for oil.

Photos Photothèque Esso

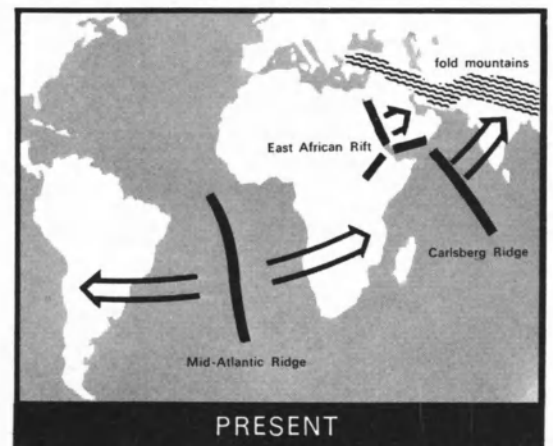
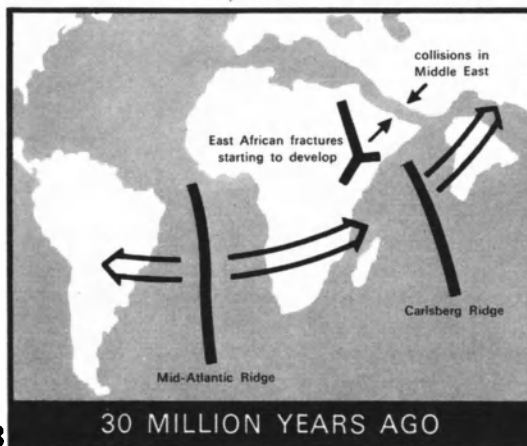
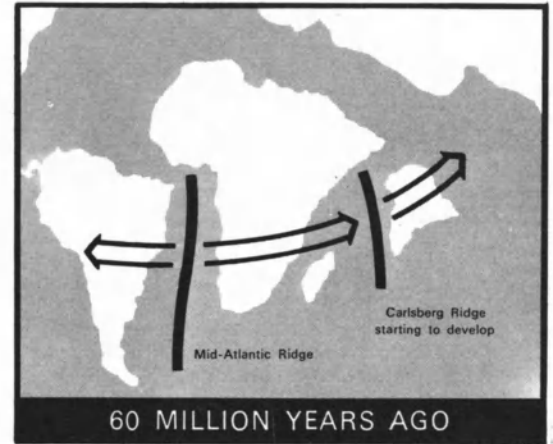
ELECTRONIC ANCHOR

The American drilling research vessel, "Glomar Challenger" uses a new control system of "dynamic anchoring" to stay on "target" while drilling into the ocean floor in deep water. Diagram left shows how. Sonar beacons placed on sea bed send signals to hydrophones on ship, and the signals are fed to a computer which automatically monitors the ship's position and controls the engines so that position is maintained despite currents and swell. The "Glomar Challenger", while participating in the U.S. National Science Foundation's deep-sea drilling project, has established records for the deepest water worked in (6,140 metres) and the deepest penetration of the ocean bed (985 metres).



Geophysicists and oceanographers are becoming increasingly confident about their understanding of the development of ocean floors. From recent research a picture has been built up of a worldwide system of mid ocean ridges from which new oceanic crust spreads out to form the ocean floors. How these ocean ridges may have formed and how land masses drifted apart — and collided — are shown in these four drawings (1) As Mid-Atlantic ridge began to develop 120 million years ago, African and Indian land masses separated from South America. (2) About sixty million years ago, Carlsberg Ridge developed between Africa and India, driving the latter towards Asia. (3) Thirty million years ago, another ridge formed in the gulf of Aden and, separated by a fracture zone to north of Carlsberg Ridge, led to East African fractures. (4) The situation today, with East African Rift continuing to develop independently. Fold mountains (top right of drawing) including Himalayas, were a dramatic consequence of land mass collisions from 60 to 30 million years ago.

Drawings © courtesy Science Journal



120 million years ago birth of the Mid-Atlantic Ridge

ANCIENT SUPERCONTINENT (Continued)

year if there had been no civil war.

The North Sea is supplying 1,000 million cubic feet a day of natural gas to Great Britain. Surprisingly enough, the sea floor also accounts for 7 per cent of British coal production: 11 million of the 160 million tons mined annually comes from mines that run three to four miles out to sea off the coasts of Cumberland and Northumberland with entrances to their shafts on land. Offshore coal reserves are estimated at 550 million tons.

Ten per cent of British gravel also comes from the sea floor. A total of 11 million tons was dredged up in

1969 and, according to Prof. K. C. Dunham, director of the Institute of Geological Sciences in London, capital investment in this industry now amounts to £25 million.

To the north of the East Atlantic Continental Margin, gravel comes up by the ton; on the far south, diamonds come up by the carat. The symposium heard a report by R. H. Joynt of Consolidated Diamond Mines of southwest Africa on operations near the mouth of the Orange River.

Exploration for diamonds is not easy. Profiles are run out from the shore at intervals of 100 metres,

bedrock must be contoured at one metre intervals (to the marine geologist, this sounds like looking at the continental shelf through a jeweller's eyeglass). To explore gullies, divers must crawl through them with a visibility of only 30 cm., in water at 10 degrees C.

Undersea diamond prospecting is hard work and expensive. Only last year, said Mr. Joynt, did the operation show a profit. When asked how much it represented of his firm's total operations, he replied: "We probably spend as much each month on postage stamps." ■

Letters to the Editor

CIGARETTES AND ADVERTISING

Sir,

Your article, "The Case Against Smoking" (May 1970 number) says that steps have been taken against the advertising of tobacco in several countries, including France. The only limiting factor in France, as far as I know, is that the State holds the tobacco monopoly and consequently it alone can advertise French and foreign brands of cigarettes. But the official organization that handles tobacco for the government can advertise as much as it deems fit.

To my knowledge, there are no laws governing the advertising of tobacco in France. The International Code for Fair Practice in Advertising, drawn up by the International Chamber of Commerce, can be discounted since it has no legal force. In the United States cigarette packets carry a warning that smoking is a health hazard. Why not apply the same rule to American cigarettes sold in France?

Why do we use advertising to encourage people to smoke? And why do soldiers in France receive part of their pay as a cigarette issue (are these a necessity of life)?

Jean Chaumien
Strasbourg, France

PORTRAIT OF MONGOLIA

Sir,

I was delighted with the article on my country published in your November 1969 issue. Special thanks are due to your staff and to the authors of the article, Konrad Facknitz and Lev Kostikov, for their first rate account which accurately describes life today in the Mongolian People's Republic.

Jambalyn Banzar
Permanent Delegate of the
Mongolian People's Republic to Unesco

WORLD OF SILENCE

Sir,

I am sure your magazine has contributed in a large measure to uplift, guide and channelize the present turbulent thinking in right directions. My vocation is teaching the deaf children in Bombay. Time and again your enlightened magazine has thrown light on other handicapped problems like "Blindness" etc., but so far I have not come across any article in your magazine on problems of the deaf.

The deaf are always misunderstood, underrated, and their talents always undermined. Public, Press and States have not given sufficient thought to this very vital problem. Because the deaf wear no crutches, or bandages or braces and look so normal their handicap has been badly ignored and neglected all over the world. In India the problem is colossal, although since 3-4 years people concerned with it are trying to rouse public opinion.

The deaf have all normal faculties but they are imprisoned in a world of no speech and no sound. The world is like a silent screen to them. They see people moving and talking but without

the stimulus of hearing, the world appears dead for them. May I therefore request you to take up this problem in your magazine and give it a deserving lead.

R. R. Pavri
Bombay, India

CAIRO'S MOUKHTAR MUSEUM

Sir,

The photo story, "The Fabulous Treasures of Cairo's Museums", (April 1970) states that works of great European artists—Goya, Delacroix, Rubens, Van Gogh, etc.—and of Egyptian painters such as Mahmoud Said and Mohammad Negui, are displayed in Cairo's Moukhtar Museum.

The art works in question are, in fact, displayed in the Mohammed Mahmoud Khalil Museum in Cairo. The Moukhtar Museum, which was inaugurated in 1964, is exclusively devoted to the works of the famous Egyptian sculptor, Mahmoud Moukhtar (1891-1934).

Osman Nowaya
Cairo, U.A.R.

ROOTS OF PEACE

Sir,

Your issue on education (January 1970) was most interesting, but I was disappointed to find no mention of the World Association for the School as an Instrument of Peace (President: Jacques Muhlethaler, 5 rue du Simplon, Geneva, Switzerland).

You presented many other subjects—the teacher shortage, how and what to teach, etc—but did not touch on "schools and peace". In a number dealing with "Education at the Crossroads", this was a regrettable omission.

How can education be revitalized when, as you pointed out, \$4,000,000,000,000 will be spent on armaments over the next ten years? If arms take precedence over education, is it not because school lessons are still concerned with the "art" of war, because national heroes and national victories are glorified, because other nations are termed "enemies", and other peoples not deemed worthy of respect because they are "different"? Furthermore, far too much emphasis is laid on the idea of nationalities and races. Nor are these pressures applied only in history lessons.

In what lessons are children taught ideas of tolerance, service, respect and responsibility towards others, or the need to conquer the spirit of egotism which creates a barrier in human relations.

C. Testelin
Geneva, Switzerland

LITTLE-KNOWN EDUCATOR

Sir,

I read your special number, "Education at the Crossroads" with great interest, particularly the article by Paul Lengrand, "Education put to the Question."

Having worked for a number of years in the "Modern School Movement" in France, I was delighted to find the

name of its founder, Célestin Freinet, figuring among those of Pestalozzi, Dewey, Makarenko and other noted educational reformers.

Freinet is still unknown in France, even though the "renovation of education" in the country has paid lip service to this ideas. Why not devote space in a future issue to Freinet's life, studies and views?

M. Ducouret
Nohant-Vicq, France

THIRD WORLD SPENDING ON EDUCATION

Sir,

Your interesting article, "Education... But for Whom?...And How?" (January 1970) states that most of the less well off countries "despite their poverty, devote a higher proportion of their national income to education than do the developed countries. The figure is often as high as 25 per cent and sometimes even higher..." It is obvious that "national income" was meant to be "national budget".

W. B. Dros
Bangkok, Thailand

Our reader is quite right. The statement "national income" should have read "national budget"—Editor.

FUTILITY OF FORCE

Sir,

Just over a year ago, Morihei Ueshiba, the creator of Aikido, died in Tokyo at the age of 86. In his youth, Ueshiba studied many schools of personal combat still current in Japan—the Daito school of Ju-Jitsu, Kenjutsu (fencing with sabres), combat with lances, etc. After much meditation, he became convinced that to achieve the ideal of peace, the martial arts should have a nobler aim than that of personal victory.

The word Ai-Ki-Do means broadly, "way of harmony of spiritual forces." The method combines advanced physical education with training in self defence. Force is never countered by force, nor aggression by aggression; the object is not to injure an adversary nor to humiliate him.

The aim is to dodge one's opponent and then to immobilize him, after "harmonizing the opposing forces." It demonstrates to both protagonists the futility of brute force, and offers an everyday means of achieving reconciliation. With competitive matches excluded, the true adept finds aggressive urges replaced by the desire to perfect his art.

Following the death of Morihei Ueshiba and at a time when the art of Aikido is being spread by his disciples throughout the world (in France, U.K., U.S., Belgium, Fed. Rep. of Germany, Italy, for example), I suggest you tell readers more about this movement for universal understanding which originated, paradoxically, from one of the martial arts.

René Le Menn
Bordeaux-Caudéran, France

UNESCO NEWSROOM

New Unesco art slides

Unesco's second series of "Painting and Sculpture" slides is being issued in a new form. Each set is presented as a hard cover book with slides fitting into pockets in the cover. Commentaries on the works by leading art authorities are included in English, French, Spanish and German language versions. Four sets are available in the new series—"Ancient Greek Sculpture", "Matisse and the Nude", "Van Dyck" and "New Guinea Sepik Art". Eight more are to be published at two monthly intervals. Sets can be ordered from Editions Rencontre, Service B, Rue du Cherche-Midi, Paris-6^e, France or from Unesco's national agents (see inside back cover). Price per set outside France 26.25 Fr F, or equivalent, or (for subscribers to the series) 21.60 Fr F.

'African Scientist'

Africa's first general science magazine, "African Scientist", has begun publication in Nairobi (Kenya). It seeks to popularize science, and to "help bring Africa firmly forward into the scientific age by informing her fully, in scientific terms, of her problems and those of the rest of the universe". Published three times a year by East African Publishing House, P.O. Box 30571, Nairobi (price: \$1.00, 8/6), the magazine plans to become a monthly.

Americans, a people on the move

In the U.S.A., 36,000,000 persons—roughly one fifth of the population—move their homes each year according to "Labor and Migration", an annotated bibliography by Thomas R. Brooks, published recently by the Brooklyn College Center for Migration Studies, New York. The bibliography, covering books and studies on the U.S. internal labour force and on immigrant labour, points out that since the "Pilgrims" landed in America in 1620, some 44 million immigrants have arrived from all points of the globe.

France adds up its art and monuments

France is taking a nation-wide census of its historic buildings and art treasures. Using the latest information-processing techniques including computer studies, the nation-wide inventory is likely to take

several decades. Following a "spotting survey" descriptive dossiers will be prepared for the thousands of works listed in the initial inventory. The monumental operation is described in "Some Aspects of French Cultural Policy", published recently by Unesco in the series "Studies and Documents on Cultural Policies".

Europe's latest U.N. stamps

Two new U.N. stamps, in denominations of 60 centimes and 10 francs (Swiss currency), from a series of fourteen to be issued in Geneva by the U.N. Postal Administration in agreement with the Swiss postal authorities, were put into circulation on April 17. The first eight stamps in this series were issued on October 4, 1969, and four more will appear on September 22, 1970. Orders for the stamps should be sent to the U.N. Postal Administration, Palais des Nations, CH - 1211 Geneva 10, or to any U.N.P.A. agency.

Flood warning outpost for Venice

A floating laboratory installed some ten miles from the Venice Lido is to collect weather data, including measurements of wind strength, water temperature and currents. Meteorologists hope it will help them to forecast the sea surges of the Adriatic which flood Venice periodically, damaging its ancient buildings and threatening its monuments and works of art.

Flashes...

■ A Unesco Regional Office for Education in Africa has been opened in Dakar, Senegal.

■ More than 75% of information about the sea stored by the U.S. National Oceanographic Data Center, Washington, comes from foreign sources—among them, 87,000 Japanese data stations.

■ The 1960s were the most prolific period for the founding of universities in the U.K. since the Middle Ages.

■ Unesco and ILO are helping the Ceylon Government to set up a national vocational training scheme which will triple the number of Ceylon's vocational schools.

■ The U.N. General Assembly has designated the year 1971 as International Year for Action to Combat Racism and Racial Discrimination.



PEACE BELL AT THE U. N.

Left, the "Peace Bell", presented to the United Nations by the Japanese United Nations Association, in 1954, is featured on 6 cent and 25 cent commemorative stamps recently issued by the U.N. Postal Administration. The "Peace Bell" was cast from coins given by children in 60 countries. It now stands at U.N. headquarters, New York, housed in a reproduction of a Japanese Shinto temple made of cypress wood. As agent in France of the U.N.

Postal Administration, Unesco's Philatelic Service stocks all U.N. stamps and first day covers currently on sale. For details write to the Unesco Philatelic Service, Unesco, place de Fontenoy, Paris (7^e).

BOOKSHELF

RECENT UNESCO BOOKS

■ **Index Translationum - 21**
(International Bibliography of Translations)
1970 (\$36, £10 15s. stg.)

■ **Field Manual for Museums**
1970 (\$7, 42/-stg.)

■ **Statistical Yearbook 1968**
Population, education, science and technology, libraries and museums, book production, newspapers and periodicals, paper consumption, film and cinema, radio and TV
1969 (\$24, 144/- stg.)

■ **The Impact of Communication on Rural Development**
An investigation in Costa Rica and India
By Prodipto Roy,
Frederick B. Waisanen
and Everett M. Rogers
Co-edition: Unesco, Paris - National Institute of Community Development, Hyderabad, India, 1969

■ **Science and Technology in Asian Development**
Conference on the application of science and technology to the development of Asia in August, 1968.
1970 (\$5, 30/- stg.)

■ **Use and Conservation of the Biosphere**
Intergovernmental conference of experts on the scientific basis for rational use and conservation of the resources of the biosphere, September 1968
1970 (\$6, 36/- stg.)

★

UNESCO'S TRANSLATIONS SERIES

JAPAN

■ **Footprints in the Snow**
By Kenjiro Tokutomi
Translated by Kenneth Strong
George Allen and Unwin, Ltd., London, 1970 (65/- stg.); Pegasus, New-York (\$8.95)

■ **Face at the Bottom of the World and other poems**
By Hagiwara Sakutaro
Translated by Graeme Wilson
Paintings by York Wilson
Charles E. Tuttle Co., Rutland, Vermont and Tokyo, Japan, 1969 (\$4)

U.S.S.R.

■ **Daredevils of Sassoun**
by Léon Surlimian
George Allen and Unwin, Ltd., 1969 (30/- stg.); Swallow, Chicago.

INDIA

■ **Jnaneshvari**
A Song Sermon on the Bhagavadgita
Translated from the Marathi by V.G. Pradhan
Edited and with introduction by H.M. Lambert
Vol. I 1967 (52/6 stg.)
Vol. II 1969 (60/- stg.)
George Allen and Unwin, Ltd.

Just published

Vacation study abroad

Vacation study abroad XIX
Cours de vacances à l'étranger
Cursos de vacaciones en el extranjero

Vacation courses and scholarships
Cours et bourses de vacances
Cursos y becas de vacaciones



Unesco

Trilingual: English-French-Spanish

93 pages 9/- \$1.50 6 F

An indispensable Unesco guide to opportunities for stimulating study and travel abroad.

The present edition gives full facts on:

- SHORT COURSES
- SEMINARS
- SUMMER SCHOOLS
- SCHOLARSHIPS AND TRAVEL GRANTS

available each year to students, teachers and others. Information comes from over 500 organizations in 54 countries.

Where to renew your subscription and order other Unesco publications

Order from any bookseller, or write direct to the National Distributor in your country. (See list below; names of distributors in countries not listed will be supplied on request.) Payment is made in the national currency; the rates quoted are for an annual subscription to THE UNESCO COURIER in any one language.

★

AFGHANISTAN. Panuzai, Press Department, Royal Afghan Ministry of Education, Kabul. — **AUSTRALIA.** Publications: Educational Supplies Pty. Ltd., P.O. Box 33, Brookvale, 2100, NSW; Periodicals: Dominic Pty. Limited, Box 33, Post Office, Brookvale 2100, NSW. Sub-agent: United Nations Association of Australia, Victorian Division, 4th Floor, Askew House, 364 Lonsdale St., Melbourne (Victoria), 3000. (\$ 2.75). — **AUSTRIA.** Verlag Georg Fromme & Co., Spengergasse 39, Vienna V (A\$ 82) — **BELGIUM.** All publications: Editions "Labor", 342, rue Royale, Brussels, 3. Presses Universitaires de Bruxelles, 42, av. Paul Héger, Brussels 5. NV Standaard-Wetenschappelijke Uitgeverij Belgiëlei 147, Antwerp, I. For the Unesco Courier (170 FB) and art slides (488 FB) only: Jean de Lannoy, 112, rue du Trône, Brussels 5. CCP 3380.00. — **BURMA.** Trade Corporation N° (9), 550-552 Merchant Street, Rangoon. — **CANADA.** Queen's Printer, Ottawa, Ont. (\$ 4.00). — **CEYLON.** Lake House Bookshop, Sir Chittampalam Gardiner Mawata, P.O.B. 244, Colombo, 2. (Rs 12.50) — **CHINA.** World Book Co. Ltd., 99 Chungking South Rd., Section 1, Taipeh, Taiwan (Formosa). — **CYPRUS.** "MAM", Archbishop Makarios 3rd Avenue, P.O. Box 1722, Nicosia. — **CZECHOSLOVAKIA.** S.N.T.L., Spalena 51, Prague 1 (permanent display); Zahranicni literatura 11 Soukenicka Prague 1. — **DENMARK.** Ejnar Munksgaard, Ltd., 6, Norregade, 1165, Copenhagen K. (Dan. Kr. 19.00). — **ETHIOPIA.** National Commission for Unesco, P.O. Box 2996, Addis Ababa. — **FINLAND.** Akateeminen Kirjakauppa, 2 Keskuskatu, Helsinki. (Fmk. 11.90). — **FRANCE.** Librairie de l'Unesco, Place de Fontenoy, Paris-7^e. C.C.P. 12598-48. (12 F). — **GERMANY.** All publications: R. Oldenbourg Verlag, Rosenheimerstrasse 145, 8 Munich, 80. For the Unesco Kurier (German ed only) Bahrenfelder-Chaussee 160, Hamburg-Bahrenfeld, C.C.P. 276650 (DM 12). — **GHANA.** Methodist Book Depot Ltd., Atlantic House, Commercial Street, POB 100, Cape

Coast. — **GREAT BRITAIN.** See United Kingdom. — **GREECE.** Librairie H. Kauffmann, 28, rue du Stade, Athens; Librairie Eleftheroudakis, Nikkis 4, Athens. — **HONG-KONG.** Swindon Book Co., 13-15 Lock Road, Kowloon. — **HUNGARY.** Akadémiai Könyvesbolt, Váci u. 22, Budapest V; A.K.V. Könyvtárosok Boltja, Népköztársaság utja 16, Budapest VI. — **ICELAND.** Snaebjörn Jónsson & Co., H.F., Hafnarstraeti 9, Reykjavik. — **INDIA.** Orient Longmans Ltd., Nicol Road, Ballard Estate, Bombay 1; 17 Chittaranjan Avenue, Calcutta 13; 36a, Mount Road, Madras 2; 3/5 Asaf Ali Road, New Delhi 1; Sub-Depots: Oxford Book & Stationery Co. 17 Park Street, Calcutta 16 and Scindia House, New Delhi; Publications Section, Ministry of Education and Youth Services, 72 Theatre Communication Building, Connaught Place New Delhi 1. (Rs. 13.50). — **INDONESIA.** Indira P. T., Djl. Dr. Sam Ratulangi 37, Djakarta. — **IRAN.** Iranian National Commission for Unesco, 1/154 Avenue Roosevelt, B.P. 1533, Teheran. — **IRAQ.** McKenzie's Bookshop, Al-Rashid Street, Baghdad; University Bookstore, University of Baghdad, P.O. Box 75, Baghdad. — **IRELAND.** The National Press, 2, Wellington Road, Ballsbridge, Dublin, 4. — **ISRAEL.** Emanuel Brown, formerly Blumstein's Bookstores, 35 Allenby Road and 48 Nahlat Benjamin Street, Tel-Aviv (IL. 12.50). — **JAMAICA.** Sangster's Book Stores Ltd., P.O. Box 366, 101 Water Lane, Kingston. — **JAPAN.** Maruzen Co. Ltd., P.O. Box 5050, Tokyo International 100-31. — **JORDAN.** Joseph I. Bahous & Co., Dar-ul-Kutub, Salt Road, P.O.B. 66, Amman. — **KENYA.** The E.S.A. Limited, P.O. Box 30167, Nairobi. — **KOREA.** Korean National Commission for Unesco, P.O. Box Central 64, Seoul. — **KUWAIT.** The Kuwait Bookshop Co., Ltd., P.O. Box 2942, Kuwait. — **LIBERIA.** Cole and Yancy Bookshops Ltd., P.O. Box 286, Monrovia. — **LIBYA.** Agency for Development of Publication & Distribution, P.O. Box 261, Tripoli. — **LUXEMBURG.** Librairie Paul Bruck, 22, Grand-Rue, Luxembourg (F.L. 170). — **MALAYSIA.** Federal Publications Sdn Bhd., Balai Berita, 31 Jalan Riong, Kuala Lumpur. — **MALTA.** Sapientia's Library, 26 Kingsway, Valletta. — **MAURITIUS.** Nalanda Company Ltd., 30, Bourbon Street, Port Louis. — **MONACO.** British Library, 30, Blvd. des Moulins, Monte Carlo. — **NETHERLANDS.** N. V. Martinus Nijhoff, Lange Voorhout, 9, The Hague. (fl. 10). — **NETHERLANDS ANTILLES.** G. C. T. Van Dorp & Co. (Ned Ant.) N.V., Willemstad, Curaçao. N.A. (NA fl 5.25). — **NEW ZEALAND.** Government Printing Office, Government Bookshops at: Rutland Street, P.O. Box 5344, Auckland; 130 Oxford Terrace, P.O. Box 1721, Christchurch; Alma Street, P.O. Box 857

Hamilton; Princes Street, P. O. Box 1104, Dunedin; Mulgrave Street, Private Bag, Wellington. (\$ 2.15) — **NORWAY.** All publications: A.S. Bokhjornet, Akersgt 41-Oslo 1. For Unesco Courier only: A.S. Narvesens Litteratur-jeneste, Box 6125, Oslo 6 (K. 2.75). — **PAKISTAN.** The West-Pak Publishing Co. Ltd., Unesco Publication House, P.O. Box 374 G.P.O., Lahore; Showrooms: Urdu Bazar, Lahore, and 57-58 Murree Highway, G/6-1, Islamabad. Pakistan Publications Bookshop, Sarwar Road, Rawalpindi; Paribagh, Dacca. — **PHILIPPINES.** The Modern Book Co., 928, Rizal Avenue, P.O. Box 632, Manila. — **POLAND.** All publications: ORWN PAN Palac Kultury i Nauki, Warsaw For the Unesco Courier only: RUCH, ul. Wronia, 23, Warsaw 10. — **PORTUGAL.** Dias & Andrade Lda, Livraria Portugal, rua de Carmo 70, Lisbon. — **PUERTO RICO.** Spanish English Publications, Eleanor Roosevelt 115, Apartado 1912, Hato Rey. — **SINGAPORE.** Federal Publications Sdn Bhd., Times House, River Valley Road, Singapore 9. — **SOUTHERN RHODESIA.** Textbook Sales (PVT) Ltd., 67 Union Avenue, Salisbury. — **SUDAN.** Al Bashir Bookshop, P. O. Box 1118, Khartoum. — **SWEDEN.** All publications: A/B C.E. Fritzes Kungl. Hovbokhandel, Fredsgatan 2, Box 16356, 103 27 Stockholm 16. For the Unesco Courier: Svenska FN. Forbundet, Vasagatan 15, IV 101 23 Stockholm 1 Postgiro 18 46 92 (Kr. 18) — **SWITZERLAND.** All publications: Europa Verlag, 5 Rämistrasse, Zurich. Librairie Payot, rue Genes 6, 1211, Geneva 11, C.C.P. 1-236. — **TANZANIA.** Dar-es-Salaam Bookshop, P.O.B. 9030 Dar-es-Salaam. — **THAILAND.** Suksapan Panit, Mansion 9, Rajdamnern Avenue, Bangkok. (37.50 baht). — **TURKEY.** Librairie Hachette, 469 Istiklal Caddesi, Beyoglu, Istanbul. — **UGANDA.** Uganda Bookshop, P.O. Box 145, Kampala. — **SOUTH AFRICA.** All publications: Van Schaik's Bookstore (Pty) Ltd., Libri Building, Church Street, P.O. Box 724, Pretoria. For the Unesco Courier (single copies) only: Central News Agency P.O. Box 1033, Johannesburg. — **UNITED ARAB REPUBLIC (EGYPT).** Librairie Kasr El Nil, 38, rue Kasr El Nil, Cairo. Sub-agent: La Renaissance d'Egypte, 9 Sh. Adly-Pasha, Cairo. — **UNITED KINGDOM.** H.M. Stationery Office, P.O. Box 569, London, S.E.1. and Government Bookshops in London, Edinburgh, Cardiff, Belfast, Manchester, Birmingham and Bristol. (20/-). — **UNITED STATES.** Unesco Publications Center, P.O. Box 433, New York, N.Y. 10016 (\$ 5). — **U.S.S.R.** Mezhdunarodnaja Kniga, Moscow. G-200. — **YUGOSLAVIA.** Jugoslovenska Knjiga, Terazije, 27, Belgrade; Drzavna Zaluzba Slovenije Mestni Trg. 26, Ljubljana.



ENGLISH

THE UNESCO COURIER

The illustrated monthly with a unique international outlook, dealing with the major problems and questions of our time. Recent issues published on:

- Spin-off, the fruits of space research on earth
- The race between education and catastrophe
- The ancient civilization of the Kushans of Central Asia
- The fight against cancer
- The new food revolution
- Can we keep our planet habitable?
- Peaceful uses of the atom
- Youth in ferment
- Japan, a century of extraordinary development
- Abuse of drugs: the growing menace
- The Parthenon in danger



FRENCH



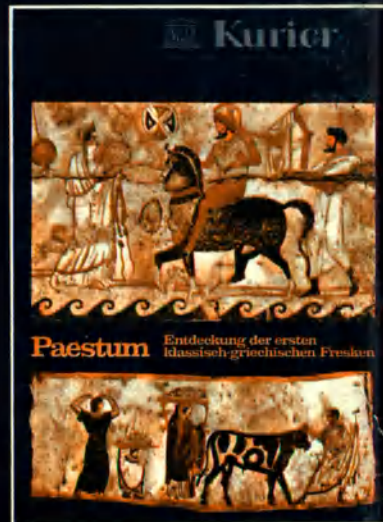
SPANISH



JAPANESE



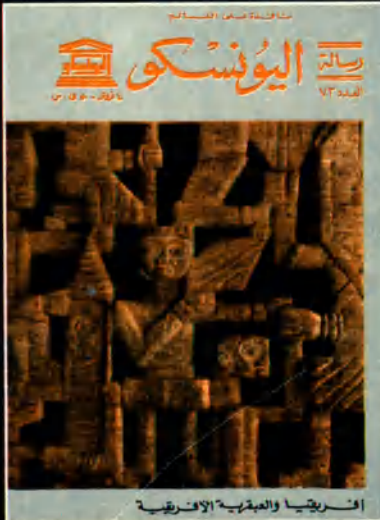
ITALIAN



GERMAN



RUSSIAN



ARABIC

Offer a gift subscription to friends and relatives

Annual subscription

20/- stg.
\$4.00 (Canada)
12 F (France)

Single copies

2/- stg.
40 cents (Canada)
1.20 F (France)

(Order from Unesco agents listed page 35)

Published monthly in 12 languages



HINDI



TAMIL



HEBREW



PERSIAN