JPRS 68386

20 December 1976

USSR

TRANSLATIONS ON USSR SCIENCE AND TECHNOLOGY
BIOMEDICAL SCIENCES
No. 1

DISTRIBUTION STATEMENT A
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BIBLIOGRAPHIC DATA SHEET	1. Report No. JPRS 68386	2.	3. Recipient's Accession No.
4. Title and Subtitle TRANSLATIONS ON USSR SCIENCE AND TECHNOLOGY BIOMEDICAL SCIENCES No. 1			5. Report Date 20 December 1976 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			10. Project/Task/Work Unit No. 11. Contract/Grant No.
12. Sponsoring Organization Name and Address As above			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstracts

The report contains information on aerospace medicine, agrotechnology, bionics and bioacoustics, biochemistry, biophysics, environmental and ecological problems, food technology, microbiology, epidemiology and immunology, marine biology, military medicine, physiology, public health, toxicology, radiobiology, veterinary medicine, behavioral science, human engineering, psychology, psychiatry and related fields, and scientists and scientific organizations in biomedical fields.

17. Key Words and Document Analysis. 17a. Descriptors

USSR	Medicine
Aerospace Medicine	Microbiology
Agrotechnology	Physiology
Biology	Psychology/Psychiatry
Botany	Public Health
Epidemiology/Immunology	Radiobiology
Human Engineering	Toxicology
Marine Biology	Veterinary Medicine

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group 2, 5E, 5J, 6, 8A

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Unlimited Availability Sold by NTIS Springfield, Virginia 22151	UNCLASSIFIED	41
	20. Security Class (This Page) UNCLASSIFIED	22. Price

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AEROSPACE MEDICINE

EFFECTS OF SPACE FLIGHTS ON FISH AND PLANTS STUDIED

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 30 Oct 1976 p 4

[Article by Svetlana Zavgorodnyaya, Novosti Press Agency Correspondent]

[Text] "Congratulations on the Fisherman's Day!" This is how the Mission Control Center greeted the cosmonauts, Boris Volynov and Vitaliy Zholobov, on 11 July 1976. In response to this greeting, the cosmonauts informed that they brought aboard the spacecraft "a good space catch." The first fry hatched from the eggs of an aquarium fish, Danio Rerio.

Now, these fry are being studied in the space genetics laboratory of the Institute of General Genetics of the USSR Academy of Sciences. They are placed in special resins, and their ultrathin sections are thoroughly studied under an electron microscope by the members of the laboratory. The fry developed normally in space, but now it is important to establish the effects of flight factors (space radiation, weightlessness) on the formation of the vestibular apparatus. It is identical in all vertebrate animals and in man.

Aboard the orbital scientific station "Salyut-5," Boris Volynov and Vitaliy Zholobov, in addition to other important experiments, were observing guppies.

Lyudvig Pal'mbakh, scientist of the Institute of General Genetics of the USSR Academy of Sciences, told us the following:

Before the flight, we placed these undemanding fish, a male and a female, in a hermetically sealed acquarium. The cosmonauts reported to the Earth that the fish had been restless at first, swimming chaotically. In short, they were completely disoriented. In human beings, only the vestibular system becomes inactive in space, but in fish, the hydrostatic apparatus (the air bladder) also "fails."

However, after a few days, the fish adapted themselves and were swimming quietly, orienting themselves to a water bubble in the body of the water in the aquarium. This bubble formed from the air space which, on the Earth, was situated between the water and the "ceiling" of the qauarium. Therefore, from this it is possible to infer that vision helped the fish in adapting to the unusual conditions.

Seeds of plants also help scientists in studying the effects of space flight factors on heredity and on processes occurring in living organisms. For example, seeds of crepis, a weed frequently found on the Earth, sprouted aboard "Salyut-5."

Scientists of the Laboratory of Space Genetics are studying the cells of pulverized roots of these sprouts under microscopes. They are interested to find out how often chromosomes "break" and what causes this.

And Arabidopsis seeds which were taken into space in a dry form are now planted in special test tubes. Scientists are observing their development closely. This plant is convenient for studying because it produces seeds 30 days after planting. Soon it will be possible to see whether or not there will be any changes in the appearance of its offsprings.

Cosmonauts Valeriy Bykovskiy and Vladimir Aksenov also took with them in their space flight classical subjects of genetic studies: guppies, eggs of Danio Rerio, plant seeds, and unicellular algae Chlorella. This experiment will make it possible for the scientists to find answers to new questions.

Academician Nikolay Dybinin, Director of the Institute of General Genetics of the USSR Academy of Sciences, described the interesting and painstaking work of his colleagues very precisely:

"Our Institute blazes many trails to the mysteries of life, and one of the most important of them is the space trail."

10,233
CSO: 1870

AGROTECHNOLOGY

CHLORELLA IN THE RATION

Moscow SOVETSKAYA ROSSIYA in Russian 9 Sep 76 p 1

[TASS item reprinted from BAKINSKIY RABOCHIY]

[Text] The first tons of chlorella, a single-celled microscopic alga, have been obtained at the Shchekinskiy Interkolkhoz Pedigreed Stock Farm Association for Fodder Production. The place for growing the algae, which has unique and valuable nutrient properties, was set up with the participation of coworkers at the Institute of Botany of the Academy of Sciences Azerbaydzhan SSR. The single-celled alga will be used as an additive in cattle feed.

CSO: 1870

FOOD SUPPLY

RESEARCH ON VITAMIN CONTENT OF FOOD FOR BAM AREA

Moscow TRUD in Russian 28 Sep 76 p 3

[Article by S. Sergeyev, Novosibirsk]

[Text] Scientists at the Siberian Department of VASKhNIL [All Union Academy of Agricultural Science imeni V. I. Lenin] and the Siberian Branch of the USSR Academy of Medical Sciences developed a program to search for ways of increasing the vitamin content and trace element content in those food products which will be produced in the fields and at the agricultural cattle-breeding complexes in the Zone of the Baykal-Amur Railroad.

Two stages of the work are anticipated. First the expedition will identify those areas where there is an insufficiency of vitamins and trace elements in agricultural production. Then a broad series of experiments will be set up on fertilization of plants with trace elements and introduction into the ration of animal vitamin supplements.

The purpose of the scientists' work is increase in the quality of food products for the inhabitants of the harsh climatic zones adjoining the Baykal-Amur Railroad.

CSO: 1870

MARINE MAMMALS

CRIMEAN EXPEDITION FOR THE STUDY OF DOLPHINS

Moscow KOMSOMOL'SKAYA PRAVDA in Russian 23 Oct 76 p 4

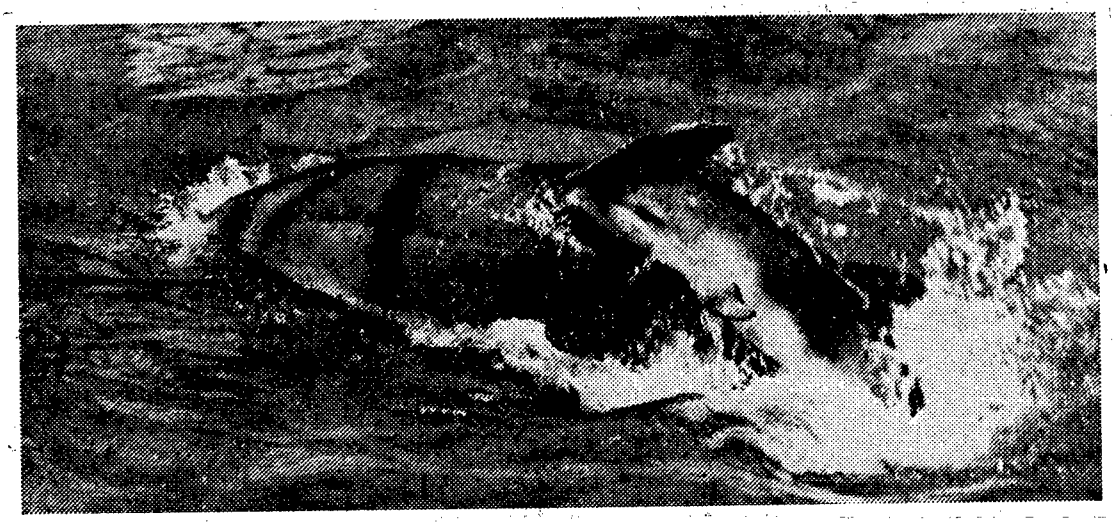
[Article: "I See a Dolphin"]

> [Text] An expedition is working for the third season in northwestern Crimea and its task is "The Study of Biology of a Local Herd of Bottlenose Dolphins." It is headed by the well-known specialist on cetaceans, V. M. Bel'kovich, administrator of the laboratory of marine bioacoustics of the Institute of Oceanology, USSR Academy of Sciences. This is the first time that wild dolphins are regularly observed in their natural habitat. Below is an essay by Maylen Konstantinovskiy reporting about one day with the expedition.

The bottlenose dolphin, unlike the two other Black Sea delphinids, common dolphin and harbor porpoise, is a coastal species, so that quite a few specimens can be seen from the shore. The main observation center resembles a sportscaster's booth in a large stadium: enormously wide window, microphones, television cameras....

Five pairs of eyes scan the sea: Volodya Dokuchayev and Masha Kapina, using binoculars, Sasha Karatsev, using a 60× spyglass (almost a telescope!), Anatoliy Borodachev, who is in charge of the cinematography team, using the viewfinder of a recording camera with a teleobjective, and Yevgeniy Makhin, deputy chief of the expedition, through the objective of the videotape camera. However, it is Lena Novikova, and not they, who "locates" the dolphins; she is presently sitting in the camp, in the laboratory. A cable was laid out there from a hydrophone with amplifier at the bottom of our bay. Lena is on acoustical monitoring duty. Listening intensively to the unimaginable mishmash of marine sounds, she detected a faint whistle and the typical ecolocating clicks, and immediately depressed the "record" button of the MUZ (ultrasonic tape recorder), simultaneously shouting over the loudspeaker system communicating with the observation center: "Hey there, keep your eyes open!"

A second later, Volodya shouts: "Flipper!" At the very same instant the dictaphone is turned on.



A unique photograph: Baby dolphin is emulating older ones. Photography by V. Bel'kovich

The reporting begins, it is somewhat gloomy, but even Ozerov would envy the pace. There are ultimately 11 sighted dolphins. Two enter the bay and these are, undoubtedly, the scouts, while the others are moving directly toward the OC [observation center]. There is rapid development of events: the animals regroup as they swim, the structure of the groups changes, they leap alone and in pairs, demonstrating, one after the other, group hunting maneuvers: "wall to wall," "merry-go-round," "kettle".... Enormous fish flash in the air all the time; holding a gray mullet in its middle, the dolphin tosses it up and, turning on its back, catches it by the head. But even at the height of the hunt, the bottlenose dolphin does not pass up a chance to play, and the reportage from the OC is amazingly like that of a soccer game at some points: "Now the dolphin tossed a large jelly fish with his tail to the front, immediately striking it with its head..." (dolphins also use shells and bunches of algae as balls....).

However, there are not many such comprehensible sections in the report, and this is logical: virtually all forms of behavior of wild bottlenose dolphins were first "spied upon" here, by the expedition (principal types of herd formation when moving, types of group leaps, means of hunting, correlations between adult specimens and offspring, etc.), and they had to be labeled in some way, terminology had to be immediately coined. As an example, I shall describe two such terms and explain them.

The term, "scout," should be understood literally: the herd passes by the bay, while the scout enters into it and inspects it thoroughly. Then there is a lively exchange of "coded messages." Of course, they are ciphers to us, but not to dolphins; however, on the basis of what follows their whistled communications, we can guess at the approximate content of the messages: "There is lots of fish, whistle everybody up!" And the herd dashes into the bay. Or: "There is not much fish, just enough for two." In the latter instance, two dolphins separate from the herd and swim toward the scout and after their meal they catch up with the rest. We wonder who these two are. Perhaps they are related to the scout? Is there nepotism among dolphins? Be that as it may, it was established that bottlenose dolphins emit very specifically directed signals to an "addressee," i.e., the signal is not intended for absolutely everyone, but to a very definite recipient: "I am calling so-and-so." "So-and-so is listening."

"Shore attack" is one of their hunting tactics: a bottlenose dolphin (less often a group) chases the fish toward the shore, sometimes grabbing it at water's edge.

After supper, the most laborious part of the work begins, data processing. On this day, 26 August 1976, after the passage of bottlenose dolphins in the morning, there were two more, which means that the staff will have to listen to three dictaphone recordings from OC-1, enter the data in the log, map out the dolphins' itinerary over the biorange and fill out about 30 cards.

With Varya Kapitsa, Masha's sister, we patiently wait our turn, we also have some processing to do. We spent the entire day at a floating OC, on the yacht cruiser, the Gulfstream, equipped with a hydrophone and tape recorder to record the dolphins' voices. Varya, like a regular sea wolf, stood at the bow with binoculars, while I sat in the cockpit with the log.

From the laboratory we hear what would sound like a strange "cacophony" to the uninitiated: whip lashes, grunting and submachine gun firing rounds. They are reproductions made by bioacoustics specialists of today's dolphin voices with 16-fold deceleration. Each signal has to be identified as to type: pulsed wide band signal, used in echolocation and orientation, to call an "interlocutor," as well as an "acoustic blow" to stun fish, or a narrow-band whistle, used for "conversations"; the shape of the signals has to be drawn out, and all this has to be transferred to special acoustic cards, and the "link-up log" has to be written up. In it, the diverse whistles and clicks of the dolphins will be correlated to the behavior of the "whistlers" with each type of sound.

And this constitutes one more small tile that is added to the far from completed mosaic picture of the life of the bottlenose dolphin, to which are linked our expectations of gaining a helper in reclaiming the ocean.

10,657
CSO: 1870

MICROBIOLOGY

LYSINE BIOSYNTHESIS PROGRAM FOR ANIMAL HUSBANDRY DISCUSSED

Riga SOVETSKAYA LATVIYA in Russian 20 October 1976 p 2

[Article by M. Beker, Doctor of Technical Sciences, Assistant Director of the Institute of Microbiology imeni A. Kirkhenshteyn of the Latvian SSR Academy of Sciences]

[Text] At the 25th Party Congress, much attention was given to the acceleration of scientific and technological progress. Scientists were presented with the problem of focusing their efforts on the most important problems, such as increasing the output of their research and accelerating the process of the introduction of scientific achievements. Improvement of the quality and efficiency of work is of great importance in activities of scientists.

In order to materialize the tasks set by the congress, the most advanced organizational forms of scientific work and the introduction of its results are selected. The complex scientific and technical programs which are now being organized, including those at the Institute of Microbiology imeni Avgust Kirkhenshteyn of the Latvian SSR Academy of Sciences, satisfy the present requirements most fully. The main problem of microbiologists is the biosynthesis of amino acids and enzymes. Within the framework of this program, it is planned to develop 2-3 scientific and technical programs stressing problems which are urgent for science and production in the republic.

One program has to do with the biosynthesis of lysine. Why lysine? This topic has been worked on for 10 years. And still, we expect a maximum yield from this direction.

The effectiveness of food lysine in animal husbandry is well known. The productivity of animals increases by 10-20 percent when the food consumption is reduced by 15-18 percent per unit of production. At the same time, the quality of meat improves: protein content increases, and the fat and moisture content decreases. Each 1000 tons of lysine in swine breeding when the animals are fed with low-protein one-cereal rations yield as much as 19,000 tons of additional meat products and make it possible to save about 80,000 tons of grain. According to the data of the Latvian Scientific Research Institute of Animal Husbandry and Veterinary, the use of lysine saves 5

million rubles a year in the Latvian SSR when swine are fattened for bacon. At the present time, the need for lysine in the country is 40,000 tons a year, and will eventually be 100,000 tons. Moreover, new properties of lysine concentrate has been discovered. This will make it possible to use it in plant growing as an attractant (bait) for combating soil pests of seeds, as an agent for the mobilization of phosphorus in the soil, and a growth stimulant for plants. It has also been established that lysine concentrate is an antioxidant. Therefore, it is also expedient to use it for stabilizing vitamins, for example, in premixes (food additives).

It is also advantageous to produce vitamin-amino acid premixes on the basis of lysine concentrate because vitamins and other biologically active substances contained in a preparation together with lysine are used rationally. It has been calculated that each 5,000 tons of lysine accompany the components of premixes of the total cost of about 2-3 million rubles.

It should be mentioned that the first experimental industrial lysine plant was built in Livany. It has assimilated the new process successfully and exceeded its design capacity and is producing new forms of lysine concentrate for preparations and premixes on its basis. In the Tenth Five-Year Plan, it is planned to reconstruct this plant and to build its second section. The importance and expediency of continuing studies on the biosynthesis of lysine appear to us sufficiently valid.

It is also necessary to note that the republic will need 6,000-7,000 tons of lysine in the future. The organizations of the Ministry of Agriculture and Ministry of Procurements of the republic have assimilated effectively the technology of using food lysine and can help in improving the methods of its rational use.

It is also important that the institute has experienced specialists and experimental facilities for extensive work in this direction. The institute has shown the possibility of intensifying the biosynthesis process and using new more promising types of raw materials. Measures of the complex program on the biosynthesis of lysine will make it possible to almost double its yield per volume unit of technological equipment, to lower the cost of the product by approximately 20-25 percent, and to reduce proportionate capital investments. The possibility of improving the quality of preparations has also been revealed.

Apart from the importance and economic effectiveness of this topic, attention to the problems of unity of theory and practice has also been given in the program. In order to regulate the biosynthesis process purposefully, the program provided for thorough genetic, biochemical, and biophysical studies of lysine-producing substances. Microbiological aspects will be united into one system with the engineering complex, including the improvement of equipment, automation, and process control with the use of electronic computers. It is planned to create a modern technological process line of a large unit capacity.

The results of the laboratory studies obtained in the program for the biosynthesis of lysine will be tested at experimental facilities before they are introduced into production. In addition to the large number of specialists of the Institute of Microbiology, the following are participating: Levany Experimental Biochemical Plant, a number of organizations of the Main Administration of Microbiological Industry of the USSR, Institute of Biology of the Latvian SSR Academy of Sciences, Ministry of Agriculture and Ministry of Procurements of the Latvian SSR, Rostov State University, and some other organizations.

Of course, the program on the biosynthesis of lysine is not the only one. At the present time problems of transforming photosynthesis products and increasing their effectiveness are being discussed. Microbiologists believe that further studies of microorganisms as producers of a rich protein with respect to its amino acid composition and of hydrolytic enzymes capable of breaking down polysaccharides of plants may lead to the creation of biological departments in animal husbandry complexes. In such biological departments, it will be possible to produce additional food proteins from local raw materials of plant origin by microbiological methods.

Preliminary studies in this direction have been started. Economic analysis must determine their expediency and further effectiveness.

10,233
CSO: 1870/137

PHYSIOLOGY

OXYGEN COCKTAIL AIDS WORK

Moscow TRUD in Russian 5 Nov 76 p 3

[Article by A. Petrov]

[Text] Before the beginning of each working day Central Telegraph workers in Omsk have been taking an oxygen cocktail.

According to testimony by medics, enriching a mixture of egg whites, vitamin syrup and soda water with oxygen acts beneficially on the human organism and reduces the extent of fatigue.

CSO: 1870

PSYCHOLOGY

BOOK ANALYZING DEVELOPMENT OF SOVIET PSYCHOLOGY REVIEWED IN MINISTRY OF EDUCATION ORGAN

Moscow UCHITEL'SKAYA GAZETA in Russian 2 Nov 76 p 2

[Review by Candidate of Psychological Sciences and Senior Scientific Colleague of the Institute of Psychology of the Academy of Sciences of the USSR A. Brushlinskiy of the Book "Razvitiya i Sovremennoye Sostoyaniye Psikhologicheskikh Nauk v SSSR," Pedagogika, Moscow, 1975]

[Text] A. A. Smirnov's monograph, "The Development and Contemporary State of Psychological Sciences in the USSR" (Moscow, PEDAGOGIKA, 1975), is the second edition of the "Foundations of Psychology" series that has already attracted attention. Its main content is the developed, documented analysis of all the basic stages of development of Soviet psychology, beginning with the psychological insights of progressive Russian thinkers of the 18th century and ending with the most recent works of our present-day psychologists.

Investigation of the immediate prehistory, the emergence, and the contemporary state of Soviet psychology occupies the central place in the book. The history of the gradual, very difficult but wholly successful rebuilding and formation of one of the concrete, individual sciences on the philosophical foundation of Marxist-Leninism is revealed to the reader.

It is well known that on the eve of, and during the period of the Great October Revolution, psychologists exhibiting a progressive materialist direction, the founding father of which was I. M. Sechenov, were not in evidence.

When Soviet psychology was being established, A. A. Smirnov notes, nobody was using the Sechenov heritage, and his works were almost not being published at all. Their enormous importance for the development of materialist psychology have still not been appreciated today. Therefore, Sechenov's position has been mistakenly considered to be mechanistic. On this historical background it is easy for the reader to understand why in

the 20's and beginning of the 30's Marxist psychology was unable to be successfully constructed. But even then Soviet psychologists considered such a transformation of science their main task.

The book permits us to come to the principally important conclusion that without favorable social-political and economic conditions a dialectical-materialist transformation of concrete sciences is impossible. Specific conditions within science itself are still necessary for this purpose. One hears of highly qualified scientists whose talent and preparation will permit the creative development of general philosophical and methodological principles in the concrete material of science. Only then will these principles themselves emerge and be developed not only "from the top to the bottom," from philosophy to psychology, but simultaneously in the reverse direction.

It was precisely along this, the only possible course, the monograph shows, that the fruitful methodological principle of the unity of consciousness and activity, developed in the works of S. L. Rubinshteyn, A. N. Leont'yev, V. G. Anan'yev, A. A. Smirnov, V. M. Teplov and others, was advanced.

The interdependence of dialectical-materialist philosophy and psychology was concretely established and used for the first time in the history of world science. The unity of consciousness and activity means that consciousness (the mind in general) not only is manifested, but is also formed in activity (work, study, play, etc.). The value of the book also consists of the fact that it exposes the enormous importance of this principle, permitting the organic joining together of the theoretical and practical work of teachers and psychologists.

Further, A. A. Smirnov shows the reader how the deeper investigation of the Marxist problem of activity in principle leads to the discovery of the still sole general methodological principle of Soviet psychology-the dialectical principle of determinism (when external causes act through internal conditions). This permits contemporary Soviet psychologists and teachers to more successfully study different levels of activity.

Many Soviet psychological investigations of perception, memory, thought, speech, abilities, character and other mental processes and properties are briefly, but rather clearly, analyzed in the monograph.

As a result of many years of efforts of scientists on the reconstruction of Soviet psychology, unity on the general approach to the most principle philosophical problems of psychological science has been achieved. The author emphasizes this conceptual unity and, moreover, on the whole correctly notes certain substantial differences between contemporary schools of our psychologists. It is unfortunate that the analysis of the D. N. Uznadze Georgian school of psychology was given such a small place in the monograph.

Comparing different theories and points of view, A. A. Smirnov in many instances also defines their importance for various applied areas of pedagogy, production and medicine. Not only psychologists, but teachers as well, will be interested in becoming acquainted with the analysis of the different sides of such severe problems as the relationship of inherited traits and abilities, the interrelationship of the abstract and the concrete in the cognitive activity of students.

It is true that in a number of places it is difficult to discern the author's personal position on psychologists' different points of view. Thus, for example, the comparison of the contradictory views of P. P. Blondskiy and L. S. Vygotskiy on internal speech, curious in itself, does not receive a sufficiently specific appraisal in the book.

On the whole the monograph is an important contribution to the investigation of the urgent, difficult and severe problems in the history and theory of psychology. It helps establish the continuity of development of Soviet science and to generalize its best achievements. Today, when psychology has entered into its new, and probably most complex, period of its development, associated with innumerable attempts to cybernetize and mathematize it, such an approach is especially fruitful.

Illusions about the fact that past and even very recent accomplishments are unscientific or insufficiently scientific from the point of view of the newest, supposedly stricter and solely reliable criteria have certainly emerged, are emerging and will probably continue to emerge for a long time. A. A. Smirnov scatters these illusions in his book. Read it and you will once again be convinced that the most important, theoretically and experimentally founded conclusions, generalizations and principles of psychology maintain their vitality today as well. Skillfully interacting with mathematics, physics, biology, sociology and other sciences, psychology is enriching its methods and procedures. The rich experience of Soviet psychology, deeply analyzed in the monograph, attests to this.

CSO: 1870

RADIOBIOLOGY

PROBLEMS OF DOSIMETRY

Riga SOVETSKAYA LATVIYA in Russian 3 Oct 76 p 2

[Article by Ya. Kristapson, Candidate of Physical and Mathematical Sciences]

[Text] The problem of recording and measuring X-ray radiation arose with the discovery of X-rays. With the ever-increasing use of X-rays in medicine, nuclear science and technology, and radio-isotope devices, methods of recording this radiation are also improving.

One of these methods involves the use of the luminescence of many substances under the influence of radiation (so-called luminescent screens). Such luminophores as tungstates, phosphates, ionic compounds and other compounds containing activating rare-earth elements, are used for this purpose. The use of luminescent screens permits the detection of ionizing radiation at the moment of its action. Calculating the total irradiation dose is equally important. For this purpose materials are used which accumulate the radiation effect. Measuring the radiation dose, that is the total effect, is also possible with luminscent media.

The Second All-Union Symposium, which recently opened in Riga, is devoted to the development and use of these methods, and includes both physicists and doctors as participants. The symposium's program also includes such questions as the work of X-ray image amplifiers, X-ray television systems, and systems which record X-ray images.

Problems of radiation recording and dosimetry are intimately connected also with protection of the environment and radiation hygiene. It is interesting to note, for example, that half of the natural radiation background consists of cosmic rays, and the other half is provided by the radioactivity of the earth's core and the human body.

The selection of Riga for the conference was not accidental. The Institute of Physics of the Latvian Academy of Sciences and the Riga Medical Institute have developed a thermoluminescent dosimetric system designated "Telde", which is used for measuring the dose of X-ray radiation obtained by patients and medical personnel in X-ray centers. This system can be used for monitoring the radiation background of the environment, in dosimetry around atomic reactors, and other specialized sources of ionizing radiation. The scientific research of Latvian scientists along these lines is well known both in the Soviet Union and abroad.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

FAITH IN MEDICAL CARE SHATTERED

Frunze SOVETSKAYA KIRGIZIYA in Russian 2 Sep 76 p 2

[Article by N. Mukhina, correspondent for SOVETSKAYA KIRGIZIYA: "And How Is Confidence To Be Restored...."]

[Text] A letter made us take a trip.

"Dear editor: Our family has been stricken with a great sorrow. On 16 July, my wife, Mariya Illarionovna Kiyko, and mother of three children, died at the Cuyskiy Rayon Hospital. We realize that medical men are not all-powerful and they cannot always save a patient's life. But it would have been much easier for us to endure our sorrow if we had seen that everything possible had been done to save our patient, and that she had been at least treated with compassion. But it turned out to be the opposite...."; excerpt from the letter from I. Kiyko, village of Chuy.

The Chuyskiy Rayon Hospital has a good record among the therapeutic institutions of our republic, and the name of its administrator, S. Sh. Khilol, is often mentioned at the Ministry of Health among the most zealous managers. Indeed, it is thanks to his efforts that a three-story hospital building was erected a few years ago, with well-equipped offices and laboratories. At present, not far from the hospital, construction of a two-story polyclinic building is being completed.... In general, quite a lot is being done to improve medical care of the public.

And the staff assembled here is also not poor, in essence. Patients have quite a few kind words to say about the medical workers of the internal medicine department, emergency [or receiving] ward and others.

All the more pitiful, against such a background, is the story told by I. F. Kiyko. Here is its substance.

On 3 July, Mariya Illarionovna Kiyko fell and sustained a trauma. She was taken by ambulance to the emergency ward of Chuyskiy Rayon Hospital, where the on-duty physician diagnosed a brain concussion. The daughter accompanied her mother to the ward of the surgical department. After returning in 2 hours with linen [probably nightgown?] for the patient, she saw that the dressing applied at home had not even been changed. She asked the nurse on duty, L.

Savich, to quickly take care of her mother. The nurse rudely advised her to leave the premises. The daughter had to go with the same request to the emergency ward physician.

On the following day, while visiting the patients, her relatives learned that the nurse had scolded her: "Just why is your daughter going around and complaining." L. Savich managed to have the patient discharged prematurely. The condition of M. I. Kiyko worsened. On 12 July and twice on 13 July they had to call for emergency care, and on 14 July the patient was rehospitalized. She expired on 16 July.

It was difficult to listen to this report in the office of the deputy chief physician of Chuyskiy Rayon Hospital. According to the case history, the patient suddently [unexpectedly] developed leukemia. As far back as 5 July, the blood test had shown a minor elevation of leukocytes, which is not uncommon in sick people. Ten days later, the count increased by almost eight times. The physicians could not predict such a flare-up, there were no symptoms. When the disease was identified, all orders were properly executed in the opinion of the Ministry of Health specialists, but the patient could not be saved.

Perhaps, if she had not been discharged prematurely from the hospital, the correct diagnosis would have been made sooner and her suffering could at least have been alleviated, I. F. Kiyko wrote.

"If she had not been discharged prematurely...." This is a story of wounded pride winning over the sense of duty and compassion.

Medicine is such a wide field of action that any type of people can be found employed in it. But it does not tolerate a harsh attitude toward people. Thousands of medical men, sparing neither effort or time, watch over our health. Unfortunately, there are also some instances when people select a medical occupation without realizing the importance and necessity of such work and the responsibility it involves.

The victim was first examined by Shamanina, emergency department feldsher. When she responded to the call on 3 July, the feldsher did not even have iodine in her kit to treat the wound. She had to swab the edges of the wound with some cologne she found right there, at the house, and apply a simple gauze dressing. It is no wonder that the gauze was soaked through in 2 hours and that the relatives asked that it be replaced. Yet a dressing applied in accordance with all the rules does not have to be changed for several hours.

The nurse on duty in the surgical department, Comrade Savich, during whose shift this patient was admitted, was negligent in her duties. Not only did she fail to make the woman comfortable in the ward, letting relatives do this, she could not find the time to render care for 2 hours.

Daily, there were different nurses on duty, but the patient's feelings were never hurt by anyone but Comrade Savich. This nurse also complained

about the patient, maintaining that she walked about during the "quiet hour," disrupting the hospital regimen. Of course, these mutual complaints reached Comrade Dzhaparaliyev, the attending physician. How did he handle this conflict?

We were unable to obtain an answer from him personally; the doctor was on leave. But there were some entries on the patient's chart which, to some extent, characterized the physician's attitude toward the conflict.

Here is the entry for 9 July. On this day, the patient had a temperature of about 38°. Yet the on-duty physician writes: "No complaints, sleep and appetite good. The patient walks around during the 'quiet hour.' She has been given a warning." And on the next day: "No complaints. The patient gets out of bed and walks. At night, she slips coats to visitors and lets relatives in the ward.* She was discharged for disrupting the routine [regimen]."

We see that there is an entry about the coat, but not a word about the condition [of the patient]. Yet the patient, sent home prematurely, immediately had to go to bed with a fever. And 1 day later the emergency team had to be called.

The relatives learned only after her death that M. I. Kiyko had been discharged prematurely for disrupting the hospital routine. As we checked out the letter, we became convinced that the leukemia, which was the cause of death, flared up unexpectedly and symptoms appeared on the last 2-3 days. And had the physicians of the rayon hospital been more conscientious, with full responsibility for human life, they could have, if not saved the patient, alleviated her suffering.

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*[In the USSR, visitors are given coats to wear before being allowed on the wards.]

SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

RESEARCH INSTITUTE SET UP FOR MEDICAL PROBLEMS OF THE NORTH

Moscow SEL'SKAYA ZHIZN' in Russian 30 Jul 76 p 3

[Text] The Scientific Research Institute for Medical Problems of the North of the Siberian Branch of the USSR Academy of Medical Sciences has been organized in Krasnoyarsk. The Institute will carry out a comprehensive program of research. Particular attention will be given to the peculiarities of adaptation of children's and adult organisms to the specific conditions of the North, and to the elaboration of methods of the prophylaxis and treatment of various diseases. The work of the institute will contribute to a more successful solution of complex problems of the economic development of the Extreme North.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

CONGRESS OF REPUBLIC CARDIOLOGISTS

Vil'nyus SOVETSKAYA LITVA in Russian 11 Nov 76 p 1

[Text] The First Congress of Lithuanian Cardiologists opened here today (10 November, Kaunas). Members of the republic Society of Cardiologists, heads of city public health departments, chief physicians of republic and rayon hospitals, workers of rheumatic heart offices, and noted specialists in this field from fraternal republics and central scientific research establishments of the country are taking part in the congress.

Prof Z. Yanushkyavichyus, chairman of the Lithuanian Scientific Society of Cardiologists, rector of the Kaunas Medical Institute and Academician, opened the congress. The first deputy minister of health of the Lithuanian SSR, M. Zaykauskas, welcomed the republic cardiologists and the congress guests.

As noted in the plenary meeting of the congress, the Lithuanian Society of Cardiologists is a union of specialists in various fields--therapists, surgeons, pediatricians, physiologists and health resort scientists. Through joint efforts they are fighting one of the oldest scourges of man in our century--cardiovascular diseases and ischemic heart diseases. Questions of the distribution, early diagnosis, treatment, and dispensary observations of these diseases were widely discussed in meetings of sections of the congress.

The secretary of the Central Committee of the Lithuanian Communist Party, L. Shepetis, appeared at the congress of Lithuanian cardiologists.

The first secretary of the Kaunas City Party Committee, V. Mikuchyauskas; the head of the Department of Science and Educational Institutions of the Central Committee of the Lithuanian Communist Party, I. Anichas; and other responsible party and Soviet workers attended the congress.

The First Congress of Lithuanian Cardiologists will last 3 days.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

BIOCHEMICAL CONFERENCE

Tallin SOVETSKAYA ESTONIYA in Russian 17 Nov 76 p 3

[Text] The 25th CPSU Congress has charged the nation's scientists with great tasks in molecular biology, epidemiology and other sciences. In particular, enzymology--science of enzymes--is a fundamental for many fields of biochemistry and medicine.

At the opening of a 3-day biochemical conference of Baltic area republics and the Belorussian SSR on 16 November in Tallin, scientists' activities in light of the decisions of the 25th party congress were discussed. I. Sibul', chairman of the Tallin Division of the All-Union Biochemical Society and Corresponding Member of the Estonian Academy of Sciences, presented an introductory talk and a report on the sum and perspectives of biochemical development in Estonia at a plenary meeting.

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PATHOPHYSIOLOGY CONGRESS

Tashkent PRAVDA VOSTOKA in Russian 16 Oct 76 p 4

[Article by Prof N. Abdullayev, chairman of the Uzbekistan Scientific Medical Society of Pathophysiologists]

[Text] The Second All-Union Congress of Pathophysiologists in Tashkent was concluded on 15 October. It discussed important problems, the answers to which, like the answers to other biomedical problems, would ultimately aid in sucess of the battle for human health. For one cannot find the true way to treat an illness without studying morbid processes and states of the organism.

For this reason, the congress could not fail to discuss, if only briefly, development of pathophysiology in our republic. The basic prerequisite for this, as was the case for development of other sciences, was establishment of Soviet power and adoption of decrees by the Soviet government concerning organization of VUZ's and scientific research institutes. Its foundation was laid in Uzbekistan by outstanding Russian scientists, who came here by decree of V. I. Lenin, to organize the Central Asian University. Its medical faculty was subsequently converted into the Tashkent State Medical Institute. Here, in 1921, the chair of general pathology was founded which was then renamed the chair of pathological physiology; its first head, Professor V. V. Vasilevskiy, was a disciple of one of the founders of the Soviet school of pathophysiologists, A. B. Fogt; Vasilevskiy came to Uzbekistan by decree of V. I. Lenin.

The scientists on this chair have and continue to develop questions of local pathophysiology. For example, they have investigated the causes of onset and development in our republic of such serious diseases as toxic hepatitis with ascites and Dzhaylangarskiy [?] encephalitis. These studies made a significant contribution to the successful control of these diseases.

In the last few years, the range of scientific problems upon which the pathophysiologists of our republic worked became broader. More attention was given to investigation of the causes of functional disturbances of digestive organs, endocrine system, metabolism, as well as problems of general

theoretical medicine and clinical pathophysiology. This was aided by expansion of the network of chairs of pathophysiology and laboratories. The scientists of the chair of pathological physiology at Samarkand Medical Institute have made considerable strides in their work on problems of local allergology and investigation of the mechanism of action of pesticides. Similar chairs were established at the Andizhan Medical and Central Asian Pediatric institutes. The chair of pharmacology and fundamentals of pathophysiology at the Tashkent Pharmaceutical Institute, the Central Scientific Research Laboratory of the Institute for Advanced Training of Physicians, as well as pathophysiology laboratories of scientific research institutes are working on the same problems. There are 14 doctors of sciences and more than 60 candidates of sciences employed in these institutions; many of them have produced research that has merited attention, not only in our country, but abroad as well.

Important new tasks have been put to medical science and public health in the decisions of the 25th CPSU Congress. At the present time, scientists are concentrating on control of cardiovascular, endocrine, oncological, viral and occupational diseases, and pathology of the nervous system. Deeper research must be done in the field of molecular biology, physiobiochemical and immunological bases of vital activity of the organism. Pathophysiologists must also make their contribution toward resolving these problems. Their task is to investigate processes of injury to the organism, its adaptation to the environment, to find means of normalizing morbid disorders in the organism. These problems as well as the matter of upgrading instruction of pathophysiology at medical institutes in the nation were the topics discussed by the congress of pathophysiologists in Tashkent.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

MICROBIOLOGY: PROBLEMS AND PROSPECTS

Yerevan KOMMUNIST in Russian 17 Sep 76 p 2

[Article by E. Afrikyan, director of the Institute of Microbiology, Armenian Academy of Sciences]

[Text] The Ninth Five-Year-Plan period marked an important phase in the development of general and applied microbiology in the nation and in our republic. While in previous years, we were primarily concerned with organizational measures, development of engineering design documentation and building industrial enterprises, during the period of the last Five-Year Plan major construction was completed for the microbiological industry, for the production of protein and vitamin products, microbiological agents for the protection of plants, and many other valuable products. The microbiological synthesis industry is developing with success and its share in the national economy is ever increasing. Development of this field is implemented by active involvement of a number of new scientific research and planning-designing organizations.

The following microbiological enterprises have begun to operate in our republic: Charentsavan Lysine Production Plant and Abovyan Plant of Biochemical Products. This new branch of industry is no producing protein products and effective microbiological products for the protection of plants that are presently acutely needed in agriculture of our country.

This qualitatively new stage of development of the microbiological industry also sets forth new and even more important tasks. In addition to solving a number of technological, industrial problems to assure the successful operation of these enterprises, there is an imperative need to work out a system of cooperation of this new branch in the industrial complex of the republic, to take steps to assure highly effective use of production and implement measures to assimilate production of new bacterial products.

The erection of a large complex of buildings of the Institute of Microbiology, Armenian Academy of Sciences, in Abovyan constituted a landmark in the development of general and applied microbiology in Armenia. We now have all the necessary conditions to develop new, promising directions of microbiology. And the Abovyan Plant of Biochemical Products, situated next to this institute, provides the opportunity for rapid realization of scientific-industrial

projects. Designation of the Charentsavan branch of the All-Union Scientific Research Institute of Genetics as the scientific base for genetic research and development of new, highly productive strains for industry....[incomplete sentence in source]. If we consider the fact that there are quite a few specialists in the field of general and applied microbiology in VUZ's and departmental organizations, we can state with certainty that, in our republic, there is a large group of scientists at work, who are capable of resolving the important problems of microbiological science and industry.

The board of the USSR Main Administration for the Microbiological Industry, after hearing the report on the activities of the Institute of Microbiology, Armenian Academy of Sciences, adopted several important decisions concerning speedier assimilation in industry of the scientific advances. It was decided to organize an SKTB [special design and technological office] of Glavmikrobioprom [Main Administration for the Microbiological Industry] at our institute. According to the results of projects worked on by the institute, at the present time the design and technological documentation is being prepared for the construction of major experimental industrial installations for the production of bacterodencid (bacterial product against rodents), new bacterial insecticides and fertilizers, protein and vitamin concentrate using phototrophic bacteria, lactic acid ferments, amino acids and a few other products of practical value. It is planned to broaden research in the field of mining microbiology, to create technological lines for the development of industrial methods of microbiological lixiviation and obtaining metals. Implementation of these measures predetermines the main directions of development of the microbiological industry in this republic in the years of the 10th Five-Year Plan.

Organization in Armenia of microbiological production of fodder and food products is unquestionably the first and foremost task. The method of microbiological synthesis is still the most promising and most effective, from the standpoint of technology and economy, means of resolving the fodder problem on an industrial basis.

First of all, there must be comprehensive intensification of work dealing with microbiological development of protein and vitamin products, using phototrophic bacteria; carbon dioxide and solar energy serve in this process. Our institute is completing preparation of base data for designing and constructing a large experimental installation for culturing photo rophic bacteria. Estimates show that the protein product thus obtained should be quite cheap and economical.

Development of microbiological production of animal feed using hydrogen oxidizing bacteria, on the basis of hydrogen and oxygen resources released by the Yerevan Chemical Combine is an equally promising direction. Finally, there are considerable raw material resources, in the form of waste of the chemical and other branches of industry, which could be used to organize microbiological development of protein and vitamin products. Research conducted at our institute has shown that cellulose waste, as well as organic waste from a number of enterprises of the chemical and local industries could serve to obtain fat by the microbiological method.

Creation of a firm feed base is closely related to organization and development of microbiological production of protein compounds, amino acids. In addition to expansion of the Charentsavan plant that produces the most important amino acid, lysine, it would be purposeful to organize at the same plant the development of other amino acids, of which there is a shortage, not only for feed but food purposes.

Microbiology has vast opportunities for intensifying many branches of the national economy, and first of all agriculture. In this regard, we must stress the importance of work dealing with cultivation of tissues and cells of different plants in so-called suspended ["suspendial"] cultures, i.e., like microorganisms, on synthetic nutrient media in apparatus, under industrial conditions. It has been established, in our country and others, that this method intensifies growth of plant cells and processes of their formation of products by hundreds of times. The results of this research is being adopted in industrial practice for the production of drugs and other valuable products. Research on suspended cultures of geranium cells and tissues has yielded some encouraging results. Plans are being made to make use thereof in industry.

Work in the field of soil microbiology and production of fertilizers merits special attention.

The use of effective forms of rhizobiums increases the harvest by a mean of 15-20%. A product obtained from such bacteria, which was named nitragin, used to be produced in our republic at one time, but the technology was not refined. Recently, work was completed at our institute dealing with regulations for the production of dry and peat nitragin, to design and construct a commercial facility to implement such production. In Armenia, leguminous crops take up to 100,000 hectares of land. Obviously, organization of production of this valuable product at the Abovyan Plant of Biochemical Products and use thereof in our republic should yield a perceptible practical result.

Development of a system of rational use of nitrogen fertilizers would be inconceivable without research on soil microbiology. The fact of the matter is that rather significant amounts of fertilizers are lost due to the activity of various groups of microorganisms. To prevent this phenomenon, the production and use of special products that suppress nitrification have been organized in some countries. It should also be borne in mind that many nitrogen fertilizers depress the process of biological fixation of atmospheric nitrogen.

Many scientific institutions of our republic are working on problems of soil microbiology. However, they deal primarily with descriptive and ecological questions, or play an ancillary role at a number of agricultural institutions. It is imperative for these problems to gain the main attention of specialists.

The specialists of our republic are to be indisputably credited for the development and industrial assimilation of production of microbiological agents for the protection of plants. The research conducted at our institute, in collaboration with other institutions, made it possible to develop a new

technology for commercial manufacture of a bacterial product against rodents, bactorodencid ["baktorodentsid"]. An experimental batch of 20 tons of granular bactorodencid was produced at the Abovyan Plant of Biochemical Products, and it has successfully passed field tests.

Several times more insecticides must be produced, and there is reason to expect that the bacterial insecticides developed at our institute will be accepted for mass commercial production. At the present time, the institute is preparing the paperwork for organizing production of a number of bacterial enzymes.

There are several measures that must be implemented immediately in order to solve the major and important problems of microbiological science and industry. For the last few years, the question of opening a large industrial-technological department, backed up by the appropriate planning-designing and mechanical base, at our institute, was raised repeatedly. The lack of such departments has had a most adverse effect on the activities of the institute; in particular, it restricts the assistance scientists can offer to existing microbiological enterprises. For the same reason, important work on mining microbiology, preparation of technological regulations and sufficient manufacture of experimental batches of valuable products are delayed, or not being done at all.

The problem of engineering-technological personnel is still unsolved. This is a question that was raised many times; quite a few good decisions were made, but tangibly little has been done.

With the transfer of the institute to the new complex in Abovyan, there has been a sharp increase in expenses for upkeep and operation of buildings and installations. To cover these expenses, we are compelled to increase sharply the scope of work with extramural organizations, and, at the present time, over 50% of the financing is referable to nonacademic sources. It is unlikely that a similar precedent could be found among academic biological institutions in the entire nation.

Microbiologists must be called upon to work on projects for the development of wastefree production and conservation of water resources, intensification and improvement of technico-economical indices of many branches of industry and agriculture. Commercial microbiological synthesis is a young field in Armenia. Party and soviet organizations in our republic cannot fail to concentrate on matters pertaining to development of this industry. The high potential and high technical and economic indices of this branch of industry, which is vitally needed by Armenian SSR, require the constant attention of management agencies and allocation of all the necessary funds and resources to develop it.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

SECOND USSR-POLISH SYMPOSIUM ON ISCHEMIA MEETS IN TBILISI

Tbilisi ZARYA VOSTOKA in Russian 2 Sep 76 p 3

[Article: "A Meeting of Physiologists"]

[Text] The second Soviet-Polish symposium devoted to the complex study of circulatory insufficiency began 2 September in Tbilisi.

Correspondent for GRUZIA INFORMATION asked professor of the Institute of Physiology imeni I. S. Beritashvili of the Academy of Gruzia SSR, G. Mchedlishvili, to discuss the joint research of the Soviet scientists and Polish scientists concerning this important subject to which the symposium is devoted.

G. Mchedlishvili said that complex investigations of scientific problems are most effective for contemporary science. Therefore, we decided to undertake a complex study of those changes which are observed in the brain during oxygen insufficiency--ischemia. These studies usually are performed on animals.

Collaboration of Polish and Gruzian scientists began with joint studies with Polish physiologists (now professors) T. Garbulinskiy and A. Gosk when we studied the influence of the autonomic nervous system on the internal carotid arteries. Results of this study were published and acclaimed in the Soviet Union and Poland.

In association with the fact that the problems of cerebral ischemia were being explored in different countries and it was necessary to exchange the results of research periodically, it was decided to conduct systematically working symposia. The first such symposium convened in Tbilisi in May 1973.

Results of studies conducted after the first symposium will be presented at the second symposium. Plans and prospects for further scientific collaboration between Polish and Soviet scientists will be noted.

We are glad that collaboration with Polish physiologists has assumed a systematic, purposeful nature.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

NEW LABOR PROTECTION FACULTY

Moscow TRUD in Russian 21 Oct 76 p 5

[Article: "New Faculty"]

[Text] The USSR Ministry of Higher and Secondary Specialized Education has organized a faculty under the All-Union Correspondence Polytechnical Institute for raising the qualifications of supervisory workers and specialists of labor protection services in industrial enterprises. Already the structure of the lectures has been determined. Studies will begin on 1 November.

The main tasks of the faculty will be to teach new achievements of domestic and foreign science and technology in the field of labor protection and advanced methods of work in enterprises for creating health and welfare conditions of workers' labor and rest. Special attention in the educational program of the faculty will be given to actual problems of reducing traumatism, problems of environmental protection, and economic problems of labor protection. Instruction in the faculty will be available without absence from work through the correspondence system in two sessions. The length of instruction for each session is 6 months.

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CULTIVATION OF THERAPEUTIC PLANTS

Moscow SOVETSKAYA ROSSIYA in Russian 8 Sep 76 p 4

[Article by Yu. Andreotti i "Unique 'Drug Garden'"]

[Text] Even among the 115 botanical gardens in our country, the "drug garden" of the Moscow All-Union Institute for Medicinal Plants--VILR--is unusual. Collected there are 2,500 types of world medicinal flora.

The more than 200 domestic curative plants--the arsenal of today's Soviet pharmaceutical industry, are placed separately in open collection strips.

The trip for foreign healing plants to the plantations of the medicinal industry plants start out at the VILR laboratories. From the distant Himalayas smooth stephania was brought in 1958. It was then adapted to our conditions and the first crops have already been harvested. The production of the preparation gindarin for treating many nervous diseases will begin this year from massive 15-kilogram root crops at the Kazan Chemical Pharmaceutical Plant.

A beautiful tropical flower, the Catarantas rose, whose native soil is the island of Java, will be grown in the subtropical zone, in the Kobuletskiy sovkhoz. That is also a valuable plant--a number of anti-tumor clinically tested preparations has already been produced from it.

The director of the VILR, P. S. Chikov, began our discussion with the proverb "A bad seed produces neither benefits nor good stock." We therefore grow and supply almost all 26 medicinal plant sovkhozes with superior seeds. And we are cultivating more than 50 crops. We have just now completed the harvesting of Tangut rhubarb. We are on the way to cultivating valerian, camomile...

Seed harvesting is a difficult task. The valerian seeds are small and look like black gnats and difficult to make out. Therefore we are harvesting only a few of those seeds--just 100 kilograms per one hectare. And manually at that.

Alongside the seedbeds are plots used as laboratories of ecology, and the biological development and introduction of plants. Showing us those areas was senior scientific associate V. P. Kiselev.

He told us that several plants have already become very rare, registered into the Red Book, or simply do not grow in our country. According to our long-term future plans we are to cultivate 55 rare species of plants. So far 21 species have been "domesticated." Another 20 are being studied in the fields. Take, for example, the macleyana, a native of Japan. It adapted well to our conditions. Biologists already understand its developmental phases, time of harvesting when the plants have the least coarse parts and when the most active substances are in the greatest amounts. Chemists have identified and isolated those substances. Pharmacological and medical research has been conducted. Scheduled next are clinical tests of preparations from the plant.

Frequently the tested plants are immediately planted in seven regional stations in order to determine which regions of the country would have the most favorable conditions for growing that crop. Experiments have been conducted on ragweed, a valuable cliff-dwelling plant. That plant grows well in the sub-Alp meadows and under the protection of shrubbery. It requires its own microclimate where the creeks are next to each other. They settle in regions not easily accessible to collectors. The time has come for those plants to be cultivated closer to human habitation.

If one glances down at the experimental fields of the institute's base which adjoin the new buildings of the experimental region of the capital city of Chertanovo, one is struck by the abundance of varied colors in those fields. In progress in the orange field is a collection of Calendula petals. That plant yields up to 20 harvests in a single season. A white square plot constitutes a field of medicinal ragweed. But this plant is a special one. While nature has expended tens and hundreds of years perfecting that species, scientists have achieved the same thing through mutagenesis in one year. Up to now that plant is manually scooped up by rakes. One cannot get to those plants by vehicle because not all of the flowers are on the same level and they don't mature at the same time. One species not found in nature has flowers that are almost at the same level but the content of biologically-active substances immediately increased by 10 percent.

The medicinal plant plantations have existed for some time. And how much care and effort are required by a dried out splinter and a healing plant? Which plants thrive in heat, which prefer the cover of the forest--which?... Scientists are still writing about this and studying this in order to take the maximum riches which nature has available.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

FOREST FIRE PROBLEMS DISCUSSED

Moscow SOVETSKAYA ROSSIYA in Russian 8 Sep 76 p 4

[Article by R. Yarov "The Hot Wind Formula"]

[Text] In the summer of 1915 there were forest fires in the vast expanses of Siberian which cover an area of 16 million hectares and which also destroyed beehives, hunting grounds, hay storage sites, wood, bridges, dams, and telephone poles. It seemed as there was much sadness hovering over the cities and villages and the populated fields and hay fields: the sun's rays could not penetrate the shroud of black smoke in order to reach the land.

The problem of forest fires remains a current one. Engaged in that problem in particular are the laboratories on forest pyrology of the Krasnoyarsk Institute of Forest and Wood imeni V. N. Sukachev of the USSR Academy of Sciences Siberian Branch. Incidentally, "pyro" means fire in Greek, and pyrology has come to mean the science of forest fires. This is what we were told by the supervisor of the laboratory, professor, doctor of agricultural sciences Nikolay Petrovich Kurbatskiy: "The forests occupy a significant portion of our country's territory. Forest fires occur frequently--and not only in our country. There are fires of the taiga in Canada, similar to ours as well as in the U.S.A., the fires in eucalyptus forests of Australia, the jungles of Brazil and South Asia. If visitors from space were to actually see our planet, they probably would call it a smoky planet."

Not far from Krasnoyarsk, in the depths of the forest, there is a section of land where experiments are being conducted. In that section one can model a fire not only in an experimental area but even in a small section of forest which is carefully isolated. The laboratory has been studying the theory of forest fires and has been elaborating methods in controlling them. This constitutes an entire branch of learning which utilizes both the achievements of fundamental

sciences (physics and chemistry of combustion, meteorology, and biology) as well as seeks a concise method of research. It is necessary to find out in what way does a wave of fire transfer heat to the layers of branches and fallen trees and wood that lie in front of it. By radiation or by heat waves? Which are the principal components? This is an important question and the elaboration of methods to control forest fires depends on it.

During one experiment red hot graphite plates were used to simulate the source of heat--a fire in the forest. The radiation from the plates was directed towards conifer branches. We found out that a large portion of the heat is transferred not by beams but by the movement of heated air which dries the trees and the branches. This means that it is necessary to water combustible material in the forest.

This might seem obvious but if we find out that a large portion of the heat is transferred by rays then it would be necessary to recommend a completely different method: the branches and fallen trees should be covered by particles which deflect the rays.

But even if we dampen those trees we have to know how: not by water but by components which require a much greater amount of heat for evaporation. And such components are aqueous solutions of salt. The research results were communicated to another Krasnoyarsk institute--the Institute of Forest Management. At that institute they worked out a composition of fluid which required a much higher temperature for evaporation than was required for the evaporation of water. And later on a machine was made which, while moving in the forest, left behind it a strip of white foam.

It was considered earlier that a forest can be stopped by creating a break area in front of the fire. But the practice of recent hot years (particularly 1972) demonstrated that that theory was in error. Investigations by scientists led to a very valuable conclusion: no kind of break at all was necessary. Instead of those breaks one should create a zone of a "non-combustible" forest in which there would be no branches, fallen trees, or layers of soil capable of combustion underneath the trees.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

IMMUNOGENETICS IN ANIMAL HUSBANDRY

Vil'nyus SOVETSKAYA LITVA in Russian 29 Sep 76 p 2

[Article by A. Stankunavichyus, department head, Lithuanian Scientific Research Institute of Livestock Breeding: "Symposium in Baysogal"]

[Text] Over 70 scientists from the country's scientific research establishments have met in the Lithuanian Scientific Research Institute of Animal Husbandry to discuss practical and theoretical problems related to the use of immunogenetic methods. At the present time these methods have become very important in livestock selection.

The selection of Baysogal as the meeting place for conducting the symposium is not accidental. The fact is that the Lithuanian Ministry of Agriculture and the Institute give much attention to the development of immunogenetics and the introduction of scientific achievements into production. As early as 1965 a special laboratory was created in our institute, and in 1972 a republic self-supporting laboratory for determining cattle blood groups was created.

Forty-seven collective reports were heard during the symposium. Questions of making valuable recommendations by science and practice were discussed.

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SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

BRIEFS

USSR-FINLAND MICROBIOLOGICAL CONFERENCE--Greetings in Finnish and Russian echoed through the Lobyy of the Scientific Research Institute of Epidemiology and Microbiology imeni Pasteur. They were addressed to the participants of a scientific conference within the framework of the long collaboration, which has been developing fruitfully between the microbiologists of Leningrad and Finland since 1972. Speeches [or papers] were delivered by T. V. Peradze, director of the Institute imeni Pasteur, Professors K. N. Tokarevich and Pekko Khalonen; scientists L. M. Boychuk and Ayno Sal'mi. They summed up the results of 5 years of scientific collaboration on the topic of "Subacute sclerosing panencephalitis." In a conversation with P. Bulushev, reporter for the Leningrad department of TASS, Professor Pekko Khalonen, who heads the Institute of Virology of Turku University, remarked that the medical men of Leningrad Oblast offered a splendid example to their colleagues all over the world, being among the first to organize mass inoculation of children against measles in the USSR. The severe neurological disease of children, which is the subject of joint Soviet and Finnish research is a complication of measles. Mass administration of measles vaccine in the USSR has also eradicated subacute sclerosing panencephalitis. "We have great admiration for this success," stated Professor P. Khalonen. At the next meeting, which it was decided to convene in Helsinki, future collaboration of Soviet and Finnish microbiologists will be outlined. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 7 Sep 76 p 2] 10657

BRAIN RESEARCH--As we reported, the 7th All-Union Conference on Electrophysiology of the Central Nervous System convened on 7-9 September in Kaunas. Famous neurophysiologists of our country, representing scientific and medical centers of 12 Union republics participated in its work. Investigation of activity of the central nervous system (CNS), of the brain, is one of the most important problems of modern science. Medical men and mathematicians, biologists and pedagogues, engineers and philosophers are anxious to learn the mechanisms of its function. And this is due to the fact that CNS function refers to consciousness and memory, thinking and cognition, sleeping and wakefulness, logic and inspiration, as well as many other phenomena in vital activity of man. The CNS controls the function of the entire human body and each organ. For this reason, comprehensive research on the principles of its activity is very important. Prevous conferences convened in Moscow, Leningrad, Kiev, Tbilisi, Rostov-on-Don. It is not by chance that Kaunas took over the baton from these cities. At their meeting, the scientists devoted much attention to pharmacological and biophysical aspects of electrophysiology of

the CNS, adoption of refined quantitative methods of studying action currents, investigation of electrical activity of the optical system and parts of the brain that control visceral functions in man. The team of neurophysiologists at Kaunas Medical Institute, headed by Professor A. Mitskis, is actively involved in working on these problems. The works of Kaunas scientists dealing with quantitative analysis of electroencephalograms (EEG) are well known. The method they developed of determining depth of anesthesia according to electrical indices has gained clinical application. The elementary EEG impulse was first recorded in the laboratories of this institute. Fruitful research is being pursued there on mechanisms of vision and electrical phenomena in sleep. The convening of this conference in Kaunas constituted a form of recognition of the achievements of its neurophysiologists in solving a most important scientific problem. The All-Union conference adopted relevant recommendations. It constituted a new stride toward disclosing the mysteries of brain function. [Text] [Vil'nyus SOVETSKAYA LITVA in Russian 12 Sep 76 p 4] 10657

PHYSIOLOGICAL RESEARCH DIRECTIONS OUTLINED--The most important directions of development of physiological science constituted the agenda of the 20th Joint Session of Scientific Councils of the USSR Academy of Sciences. Yesterday, the session was opened in the conference hall of the Institute of Physiology imeni I. P. Pavlov. Academician V. N. Chernigovskiy, director of the institute, informed the Leningrad TASS reporter: "The heads of scientific teams will discuss a new principle of research in the field of physiology, following so-called long-term complex programs.... 'Nothing is more practical than good theory,' are the words of Comrade Leonid Il'ich Brezhnev at the 25th CPSU Congress that we, physiological scientists, interpreted as a direct appeal to concentrate on the major directions of scientific research." Let us consider, for example, research on the sense organs. In the 10th Five-Year Plan, particular attention will be given to this direction, since the results of future research on these refined physiological mechanisms will find practical applications in medicine, biology and engineering. The meetings of the 20th Joint Session of Scientific Councils of the USSR Academy of Sciences will proceed for 2 days. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 14 Sep 76 p 1] 10657

NEW HEALTH UNIVERSITY--Dondyushany (Moldavian SSR) 17 Sep (TASS)--A health university was opened in the village of Tsaul', the center of the Moldavian Sovkhoz-Tekhnikum imeni Lenin. The first lecture [class] on the topic of "Medicine to serve the Five-Year Plan," was delivered at all field camps. The syllabus of the university also includes lectures and talks on questions of organization of health care, prevention and treatment of various diseases, and opening consultation centers in all production sectors. The sovkhoz-tekhnikum devotes much attention to strengthening the health of rural workers. Medical men regularly conduct preventive examinations of rural workers, and they are concerned with improving sanitary conditions of field camps. [Text] [Moscow PRAVDA in Russian 18 Sep 76 p 3] 10657

CONFERENCE ON ELECTRON MICROSCOPY--(UzTAG) an All-Union conference on electron microscopy, convoked by the USSR Academy of Sciences, Uzbek Academy of Sciences and Uzbekistan Ministry of Health, met in Tashkent from 5 to 8 October. A large group of scientists from Bulgaria, Hungary, GDR, Poland, Romania, Czechoslovakia and several other countries participated in its work. The conference discussed the chief problems of development and use of electron microscopy. It was noted that today, thanks to the wide use

of electron microscopes, basically new data have been obtained in the field of physics and chemistry of solids, physical metallurgy, crystallography, mineralogy, biology and medicine. Many scientific research institutes and industrial enterprises make wide use of electron microscopy, not only for basic research, but to solve technological problems. The conference adopted recommendations for continued development of this branch of science. [Text] [Tashkent PRAVDA VOSTOKA in Russian 9 Oct 76 p 3] 10657

MOLDAVIAN CONFERENCE ON UROLOGY-- Today, the First Moldavian Scientific Conference of Urologists will convene in Kishinev, at the Political Education Center of the Central Committee of the Moldavian Communist Party. It will deal with the status of urological care in Moldavia and outline the means of continued development thereof. Our correspondent asked the head of the chair of urology and nephrology, Kishinev Medical Institute, Docent Mikhail Romanovich Byrsan to comment about this event. "The conference will discuss problems of etiology, pathogenesis, symptomatology and treatment of renal insufficiency and other pressing problems of urology. Much attention is given to urology in this republic. There are urological departments in city hospitals and those of several rayons, where patients are given highly qualified care, with due consideration of the latest theoretical and clinical advances. In addition to the existing urological departments in Kishinev, an 80-bed urological department and 40-bed nephrological one were recently opened at the Third Municipal Clinical Hospital. These departments are equipped with the latest diagnostic equipment. In the near future, in addition to the 90-bed urological department of the Republic Clinical Hospital, Moldavia's first department of operative nephrology will be organized there. This will make it possible to treat patients suffering from chronic renal insufficiency. Prominent scientists of our country will participate in the conference: Academician N. A. Lopatkin, chief urologist of the USSR Ministry of Health, professors S. D. Goligorskiy, V. N. Tkachuk, and others. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 1 Oct 76 p 4] 10657

PLANT GROWING EXPEDITION--An exploratory expedition of the All-Union Scientific Research Institute of Plant Growing imeni N. I. Vavilov has returned from the foothills of the Kopetdaga (Turkmeniya). It has brought back samples of seeds and twigs with pistils of the medicinal plant Belladonna Komarov. For thirty years this species of Solanaceae had been considered extinct. Luck was with the Leningrad scientists. They discovered the "fugitive" weeds on the shores of a spring stream. The expedition's participants immediately reported their find to associates at the Turkmen Botanical Garden who undertook steps to preserve the "plantation" under natural conditions. The leaves and roots of Belladonna, which contain a large amount of the alkaloid atropine, are of considerable medicinal significance. The Belladonna Komarov seeds which were brought by the participants in the expedition were transferred to the Botanical Institute imeni V. L. Komarov of the USSR Academy of Sciences. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 2 Sep 76 p 1] 6289

REUSABLE AGAR--The problem of the shortage of agar--an exceptionally important product for the microbiological industry--can be resolved if proposals made by Leningrad technologists are utilized. Until the present time agar, obtained from marine algae, has been utilized only a single time in the production process: Following the cultivation of bacterial microorganisms on its nutritive medium, the agar was discarded. Specialists at a Leningrad enterprise for the production of bacterial preparations at the Institute of Epidemiology and Microbiology imeni Pasteur have found a method of prolonging the life of that expensive raw material. Conducted tests have shown that following thorough washings agar, which has already been used can be put to use again. In this way, the same product can be utilized for cultivating microflora more than ten times. The annual economic savings from the introduction of that efficiency proposal at the enterprises has come to 1,600 rubles. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 4 Aug 76 p 4] 6289

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