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JPRS 84306

13 September 1983

USSR Report

LIFE SCIENCES

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 42

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BIONICS

DIVISION OF ALGAE CELLS ON THE PHASE DIVISION BOUNDARY WITH DIFFERENT HYDRODYNAMIC FLOW CONDITIONS AROUND AN OBSTACLE

Moscow BIOFIZIKA in Russian Vol 28, No 3, May-Jun 83
(manuscript received 18 Mar 82) pp 463-466

VILENKIN, B. Ya. and PERTSOV, N. A., Institute of Oceanography, USSR Academy of Sciences, Moscow; White Sea Biological Station, Moscow State University imeni M. V. Lomonosov, Poyakonda (Murmansk Oblast)

[Abstract] A study is made to determine the biological effect of differences in mass transfer rate evoked by vortex and potential flow around the surface of a specimen. It is presumed that the effect observed is determined by the hydrodynamic nature of mass transfer regardless of other possible surface phenomena such as sorption of components of the solution. Experiments were performed in a glass tube 100 cm in length and 2.8 cm in diameter with a mean seawater flow rate of 0.9 cm/s. The tube contained a specimen of organic glass, a plate on which four tubes were attached. The specimen shape was selected so that at subcritical Reynolds numbers of the flow there was a loss of flow stability on certain surfaces caused by additional friction on the surface. A certain number of cells was always present in the water flow. The results indicated a leading role of hydrodynamics at the phase division boundary in the nutrition of single cell organisms. Hydrodynamic intensification of mass transfer may also occur in nonflow situations in which thermal convection or other factors cause fluid movement. Figure 1; references 14: 7 Russian, 7 Western.
[489-6508]

BIOPHYSICS

IMPOSSIBILITY OF EXCITING PLASMA-LIKE MAGNETOHYDRODYNAMIC WAVES IN AN AQUEOUS PHYSIOLOGICAL SOLUTION

Moscow BIOFIZIKA in Russian Vol 28, No 3, May-Jun 83
(manuscript received 17 Aug 81) pp 524-527

LIVSHITS, V. A., RUBINSHTEYN, A. I. and KUZNETSOV, A. N., Institute of Chemical Physics, USSR Academy of Sciences, Moscow; Scientific Research Institute for Biological Testing of Chemical Compounds, Kupavna (Moscow Oblast)

[Abstract] The possibility of analyzing nonattenuating plasma-like magnetohydrodynamic waves in an aqueous saline electrolyte under the influence of an electromagnetic wave is studied. It is noted that the very concept of cyclotron motion of ions in an aqueous electrolyte solution has no physical sense. Thus, description of an aqueous electrolyte solution in a magnetic field as an ideal plasma is erroneous. The conclusion reached, however, do not extend to the possibility of existence in aqueous solutions of an entire class of magnetohydrodynamic effects upon which the pondermotor effect of a magnetic field on electric currents in an electrolyte, leading to macroscopic movement of the liquid and generation of surface waves, is based. References 11: 10 Russian, 1 Western.
[489-6508]

UDC 599.323.4:591.16

SOME PECULIARITIES OF SEXUAL MATURATION AND REPRODUCTION OF GREAT GERBILS RHOMBOMYS OPIMUS UNDER EXPERIMENTAL CONDITIONS

Moscow ZOOLOGICHAESKIY ZHURNAL in Russian Vol 42, No 3, Mar 83
(manuscript received 1 Feb 82) pp 418-424

SOKOLOV, V. Ye., ISAYEV, S. I. and PAVLOVA, Ye. Yu., Institute of Animal Evolutionary Morphology and Ecology, USSR Academy of Sciences, Moscow

[Abstract] An attempt to explain peculiarities of reproduction of great gerbils, under experimental conditions, in various family groupings and

pairs, involved a study of 12 family groups, 10 closely related pairs and nine pairs of strangers in a vivarium on standard rations. Under these experimental conditions, the young females reached sexual maturity at the age of 50 days, on the average, but onset of the estral cycle varied for individuals in different groups and pairs. Pairs of strangers reproduced most rapidly throughout the observation period, possibly indicating a mechanism of maintaining genetic heterogeneity. Behavior of both the male and female animals in the groups made inbreeding difficult or impossible. Regulation of reproduction, noted in the experiment, may be a method of population control and maintenance of genetic heterogeneity, although the situation is much more complicated under natural conditions. References 11 (Russian). [474-2791]

BIOTECHNOLOGY

CURRENT INNOVATIONS IN MEDICAL INSTRUMENTS AND APPARATUS CITED

Moscow LENINSKOYE ZNAMYA in Russian 8 May 83 p 4

[Article (in answer to question from readers S. Ignatov and N. Voropaev, Kolomna--"Please tell us what innovations have orginated at the All-Union Medical Instrument-Building Scientific Research Institute?") by V. Chirkunov, Academy of Pedagogical Sciences: "The Surgeon's Good Helper." In the column, Press Club LZ--The Address calls the Reader]

[Text] "The last 10 years have been characterized by extensive use of technological devices in medicine," says Viktor Viktorov, doctor of technical sciences and director of the institute. This technology is becoming increasingly complex, involving the use of the laser, the atom and electronics. Whereas several decades ago the Central Scientific Research Laboratory, which was later reorganized into our institute, was faced with such tasks as the industrialization of the semi-primitive production methods for making medical technical equipment, we are now creating units and systems for functional diagnosis, anesthetic and respiratory equipment, and physiotherapy, endoscopy, ophthamology, ultrasound and x-ray apparatus, as well as equipment for internal organ transplants.

We have worked at various stages on problems ranging from specific tasks such as, for example, developing diagnostic and therapeutic apparatus to integration of entire systems at medical institutions.

The technology is becoming more complex; new materials are available and designer thought is taking a different route. This turn in the development of medical technology is strengthening the ties between science and the production base: we have our own experimental plant and are participating actively in international collaboration. As a member of the SEV [expansion unknown] permanent commission on machine building, our institute collaborates with associations from the PRB [People's Republic of Bulgaria], HPR [Hungarian People's Republic], GDR, PNR [Polish People's Republic] and the CSSR and, also, with French, English and Finnish companies. By using our own achievements as well as those of our partners, we are making instruments which meet our mutual interests. For example, a new type of electrocardiograph created jointly by Czechoslovakia and the USSR is now being used in these countries. An apparatus designed to correct the gait of patients with diseases of central

nervous system is being used for treatment in Bulgaria and the USSR. Physicians in France are using a system set up in cooperation with Soviet scientists, designed to analyze cerebral blood flow by using radioisotopes.

It is well known that scientists and physicians are constantly doing research, but this does not always mean that he who searches finds just what he needs. From time to time, uncommon solutions arise, gaining wide recognition from the specialists of many countries and earning awards at international expositions.

For a long time, on a world-wide basis, the equipment used for anesthesia during surgical operations was unfortunately far from perfect. The consequences of this were either overdosage or the reverse--not a large enough dose of the anesthetic during the operation. All of this resulted in unpleasant sequelae for the patient, and sometimes not just for the patient but for the physician as well. Anesthetic leakage sometimes had a heavy toxic effect on him.

Vaporizers Anestezist-1 and Anestezist-2 for anesthetic agents were developed at our institute. They served as the basis for creation of modern safe anesthetic apparatus, safe for the patient as well as for the medical personnel. In due course, such anesthetic apparatus as PD-3 and PO-5 and artificial pulmonary ventilation apparatus for newborns were awarded gold medals at the Lenin Fair. In like manner, in 1981, the gold medal was awarded to the Soviet ultrasound surgical apparatus UZKh-201, designed to replace traditional means for cutting soft tissue and bone tissue.

One might call it an apparatus for bloodless surgery. In most cases it allows a two to three-fold decrease in the length of an operation. As opposed to known apparatus models having no more than 3 instruments, the new model is equipped with 6 interchangeable instruments. Clinical data have shown the advantages of this type of technology in ophthralmology.

Scientists sometimes argue as to whether or not the current technology developing at the crossroads of different sciences is in essence a new step in the approach to patient treatment. Some feel that this is indeed the case. Others maintain that there is nothing new here: at various stages of civilization, medical equipment conforming to the appropriate level of technological development has always been developed. The essence of these arguments is the same: if there are to be future improvements, scientists must possess information in the most varied disciplines. The primary task of the new medical technology will still be the care of people's health. On the eve of the third millenium, the turbulent development of medical engineering instills the hope that the 21st century will be a century of significant improvement in the health of all mankind.
Figure: Photo by O. Pomochilina of an operation in progress.

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HORIZONS IN BIOENGINEERING

Moscow IZVESTIYA in Russian 4 May 83 p 3

BAYEV, A., academician

[Abstract] Recent achievements in bioengineering are presented and prospects for future development are discussed. The fact that microbiology is the central focus of modern bioengineering is proven by the production of more than one million tons of full-value animal protein per year at enterprises of the Main Administration of the Microbiology Industry and by production of antibiotics, amino acids, enzymes and pheromones by microbiologists. Microorganisms will be used in the future to produce chemically pure products. Biochemistry has made possible the industrial use of enzymes leading to the development of immobilized enzymes and the creation of new efficient technologies including immobilization of living cells which are used to produce potent medicines such as steroid hormones. Workers at the Moscow State University Department of Chemical Enzymology, the USSR Academy of Sciences Institute of Biochemistry and the All-Union Scientific Research Institute of Bioengineering of the Main Administration of the Microbiology Industry have created a device for continuous production of sugar from cellulose. Very interesting future developments include production of phototrophic bacteria which will convert light just as plants do, thermophilic microorganisms which can exist at temperatures near 100 degrees and bacteria which grow in the absence of oxygen. These developments must be accompanied by parallel developments in physiology, biochemistry and genetics. The Scientific Research Institute of Genetics of the Main Administration of the Microbiology Industry has produced strains of Bacillus coli which synthesize threonine which is required to produce balanced fodders. Scientists at the USSR Academy of Sciences Institute of Biochemistry and Physiology have produced strains of Bacillus coli which elaborate vast quantities of one of the enzymes required for genetic engineering operations. Some institutes have collaborated, under the supervision of the USSR Academy of Sciences Institute of Bioorganic Chemistry, in the development of strains of Bacillus coli which contain genes which control interferon synthesis. Scientists at the Institute of Bioorganic Chemistry have synthesized insulin genes which, upon introduction into bacteria, compel them to synthesize insulin. Associates of the USSR Academy of Sciences Institute of Molecular Biology have produced genes of human growth hormone. The acknowledged center of Soviet research in growing plant cells and tissues is the USSR Academy of Sciences Institute of Plant Physiology with its

collaborators: the USSR Academy of Sciences Institute of Botany, the All-Union Scientific Research Institute of Bioengineering of the Main Administration of Microbiology Industry, institutes of the All-Union Academy of Agricultural Sciences V. I. Lenin and the Ministry of Agriculture. Cellular engineering of plant cells is advancing more rapidly than cellular engineering of animal cells. Studies of hybridomas have produced a cell which is a highly productive antibodies factory. There has been a great increase in the number of institutes working on this problem. These are only some of the achievements which show the fantastic possibilities of bioengineering. All of these factors are considered in laying the plans of the Interdepartmental Council on Physico-chemical Biology and Bioengineering at the USSR State Committee on Science and Technology and the USSR Academy of Sciences. These plans are directed at the further development of this area of modern science with its multiple promises for the improvement of human life.
[508-2791]

UDC 615.47:614.2(47+57)

PROBLEMS OF THE MEDICAL ENGINEERING INDUSTRY IN TECHNICAL EQUIPPING OF THE SOVIET PUBLIC HEALTH SERVICE

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan-Feb 83 pp 3-8

[Abstract] Problems faced and achievements made in improving the qualitative and quantitative level of technical equipping of the public health structure by the medical engineering industry are discussed. Major areas discussed include: advances in cardiology, anesthesiology, reanimation, oncology, pulmonary care and therapy as the result of the introduction of new equipment and organization of its use. The role of computer technology in each of these areas is discussed. Artificial kidney devices and artificial blood circulation systems are discussed. Efforts to equip and reequip the developing Soviet health armamentarium are based on these principles: a systematic complex approach to technical equipping of medical institutions, automation of basic processes of medical service, unification and standardization of basic models of medical apparatus, complexes and systems and automation of design and production of medical equipment.
[433-2791]

EPIDEMIOLOGY

WHY REGULAR VACCINATIONS ARE STILL NECESSARY

Minsk SEL'SKAYA GAZETA in Russian 17 May 83 p 4

[Article by Professor S. Nosov in column "Your Health": "Do Not Disregard Vaccinations!"]

[Text] The brilliant successes achieved by Soviet health care in controlling infectious diseases are well known: morbidity has declined sharply in the nation, and infections now occupy a very modest place among the causes of death. All this, of course, is not only an achievement of medical science and practical health care but is also the result of our general economic and scientific-technical progress, of the elevation of the material and cultural level of the life of the people.

Among the practical, purely medical "springs" permitting the achievement of such impressive results, a major role truly belongs to prophylactic vaccination. Specifically owing to vaccinations, smallpox was eliminated in the nation, poliomyelitis and diphtheria morbidities were reduced to isolated cases and whooping cough and measles morbidities were reduced to an unprecidented level.

Infections steadily retreat, and in the memory of the population the terrifying images of past epidemics, taking the lives of hundreds of thousands and millions of people, are inevitably blurred. The interest of the masses in measures for defense from infectious diseases has dulled. For example, prophylactic vaccinations that have seemingly lost their former significance have begun to trouble many citizens. Their elementary worldly logic protests: why are such vaccinations necessary if the infections are receding? And one frequently hears from parents: "Doctor! Our child is sickly, he takes all needles very painfully. Isn't it better to release him from the vaccinations?"

Such attitudes are easily understood, but they cannot be accomodated prematurely. We naturally give sick children a postponement from a preventive vaccination, but it is only temporary until recovery. For it is specifically those that are sickly that become infected more than others, and nothing need be said of the fact that they have a much more difficult time bearing infectious diseases. So that protection is especially important for them.

The speculative conclusion that "if measles is now encountered much more rarely, then the danger of catching it is nearly gone" is groundless. No, the danger is not gone. Measles, if we are to speak of it, is very infectious. It is enough for one child to fall ill when susceptible children are present in the collective for a real threat of an epidemic outbreak to be created. And children that are unvaccinated and unprotected from infection are subjected to the greatest danger.

Diphtheria and poliomyelitis are encountered in the USSR in isolated instances, and in many regions they are entirely absent. But, alas, they have not stopped threatening children. The fact is that some healthy children and adults are carriers of the agents of these infections. An infection can be "caught" from such hidden carriers of bacteria and viruses. We, the physicians, have convinced ourselves of this many times in bitter experience.

This is the question: is it permissible today for parents to refuse the weapons tested in practice, which in large measure provided our victory over infections and promoted the creation of epidemic well-being in the nation? It also cannot be forgotten that vaccinations are not only a means of individual protection, capable of guarding an individual child from illness; this is a method for our collective defense against infections. When vaccinations are not given to all children, then society unwittingly accumulates "combustible material"--those same susceptible contingents that can disseminate pathogenic microbes and under certain conditions create a danger of epidemic fires.

I will say several words in particular about smallpox vaccination. Smallpox was completely liquidated in the USSR as early as 1936. This is one of the striking achievements of Soviet health care. However, even today millions of people are given antipox vaccinations--a seeming total waste of time, materials and labor. Incidently, obligatory smallpox vaccination has been abolished in the USA and England. Perhaps we too should follow this example? We--the Soviet scientists--answer: the moment for this has not yet arrived. For there are still potent epidemic foci in separate corners of the planet (Bangladesh, India, Pakistan, and Ethiopia). In 1973, 135,000 smallpox patients were officially recorded in the world. In the opinion of authoritative experts, epidemiologic monitoring is extremely imperfect in many nations; therefore, the multitude of undetected patients, there, continue interacting with other people. With today's transportation methods, this threatens a rapid dissemination of the infection. This has, in fact, happened: the entrance of smallpox was noted in 12 nations from 1960 to 1970, and where only a portion of the population was covered by vaccinations the outbreaks sometimes took on considerable dimensions. The risk is too great and, consequently, smallpox vaccination should be conducted with the former persistence.

The time will come when conditions will be right for a sharp restriction and even the abolition of a number of vaccinations. We all believe this. But it is still early to disregard this reliable shield, protecting the happiness of each family and our most precious and cherished thing--the health of the children.

9942
CSO: 1840/420

UDC 595.421:591.9(258)

PRINCIPLES OF AVERAGE SCALE MAPPING OF DISTRIBUTION OF IXODID TICKS BASED ON AERIAL PHOTOGRAPHY

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 41, No 12, Dec 83
(manuscript received 26 Mar 81) pp 1802-1814

KUZIKOV, I. V., KORENBERG, E. I., KOVALEVSKIY, Yu. V. and RODMAN, L. S.,
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[Abstract] Due to the role played by ixodid ticks in human infectious pathogology, the interest in this group of ticks is continuously increasing, especially since new territories are being brought under human control. The goal of this study was to develop a new method for average scale mapping of the distribution of ixodid ticks based on deciphering aerial photography and on analysis of topographic charts. The territory of the Amur-Bureinskiy part of the BAM (Baykal-Amur Railroad), which lies between rivers, was selected as a model along with the taiga tick (Ixodes Persulcatus P. Sch.). Individual steps involved in this undertaking are discussed. A map is plotted showing distribution of the tick in the geographical area studied. Six groups of ticks were identified, their territory being demarcated by large rivers and high mountain ranges. In principle it was shown to be possible to use this technique to map distribution of ticks, especially in virgin lands yet to be populated. Figures 3; references 20: 19 Russian, 1 Western.
[473-7813]

MEETING DISCUSSES ROLE OF BIOLOGY IN USSR FOOD PROGRAM

Moscow ZHURNAL OBSHCHEY BIOLOGII in Russian Vol 44, No 1, Jan-Feb 83 pp 138-141

[Article by M. Ya. Vysheslavova in the "News" section: "General Biology Applied to the USSR Food Program--The General Meeting of the General Biology Department of the USSR Academy of Sciences, dedicated to realization of the decree of the May (1982) Plenum of the CPSU Central Committee, 'The USSR Food Program up to the Year 1990'"]

[Text] On 21 September 1982 in Moscow a session of the general meeting of the General Biology Department was held, dedicated to realization of the decree of the May (1982) Plenum of the CPSU Central Committee, "The USSR Food Program up to the Year 1990".

M. S. Gilyarov, academician secretary of the General Biology Department of the USSR Academy of Sciences, gave an opening address. He noted that today a great deal of research is being conducted on important problems tied to meeting the basic provisions of the USSR Food Program, adopted at the May (1982) Plenum of the CPSU Central Committee. Scientists from the General Biology Department of the USSR Academy of Sciences are conducting intensive research on theoretical questions of genetics and selection with the aim of obtaining new, productive varieties of agricultural plants and livestock breeds; research is also being done on the creation and application of new, biological stimlulant substances that accelerate maturation of animals and increase the yield of agricultural crops; on the problem of protecting the harvest from disease and pests; on the development of biological methods in the battle against pests; and on increasing productivity in the fishing industry. M. S. Gilyarov briefly described the basic directions in biology that are of great theoretical and practical significance in the resolution of problems in the Food Program. In conclusion he called on the biologists of the General Biology Department to direct all their efforts toward promoting further development of sectors of biological science aimed at meeting the goals of the USSR Food Program.

D. S. Pavlov, of the Evolutionary Morphology and Ecology of Animals Institute of the USSR Academy of Sciences, presented the paper "Ichthyology and the Food Program" on behalf of the authors' collective (Academician V. Ye. Sokolov, D. S. Pavlov, M. I. Shatunovskiy, N. V. Parin, G. D. Polyakov, and N. V. Butorin). The paper dealt with the status and prospects of research on and utilization of fish resources in the ocean, continental shelf, and inland reservoirs of our country. In recent years changes have taken place in the conditions of the

industry and fish reproduction (the introduction of economic zones in the world's oceans, pollution of reservoirs, regulation of the water flow in the majority of fishing rivers, hydroelectric construction, and so on). Under these conditions, it is extremely important to develop biological foundations for the protection, development, reconstruction and reproduction of fishing resources, and to choose the proper strategy for developing the fishing industry.

Academic institutions are working out the scientific foundations for full utilization and protection of resources in internal and external reservoirs, and in particular, management of reproduction processes among stocks of threatened and semi-threatened fish under artificial conditions. Effective ecological methods are being developed to protect fingerlings with the help of new structures built into the dams of hydroelectric power stations which allow fish to pass through (peculiarities in the behavior and reactions of fish in the current are taken into account); also being developed are methods and equipment for trapping light with the aid of a photoregister, and a rational method for conducting seismic exploration in important commercial fishing areas that will not injure the fish. Microbiological methods for cleaning polluted waters have been proposed; maximum allowable concentrations of many toxic substances have been established for reservoirs. Research is being conducted in the area of ecological forecasting. A major success of Soviet science can be seen in the substantiation and organization of artificial reproduction of sturgeon in the Caspian Sea basin. Discontinuing marine industry and releasing over 50 million hardy sturgeon fry every year have made it possible not only to compensate for the decline in the level of natural reproduction that resulted from disruption of the fishes' migration routes by hydroelectric construction, but also to increase the catch. With the participation of academic institutions, reserves have been discovered in the Black Sea basin for obtaining additional production of fish. The organization of rational utilization and increased productivity in the continental shelf areas and inland seas requires intensified research in academic and departmental institutions within the framework of interdepartmental joint programs. Biological science is faced with the serious tasks of developing measures to overcome the anthropogenic effects on the country's reservoirs, to protect the waters from pollution, to provide a basis for organization of a well-managed fishing industry (large-scale organization of fish-hatcheries, acclimatization of valuable types of fish, development of the biotechniques for artificial reproduction of fish resources, rational exploitation, and so on).

Academician A. A. Sozinov, of the Academy of Agricultural Sciences imeni V. I. Lenin, presented a paper titled "The Role of Genetics and Selection in the Realization of the Food Program". Achievements in agriculture are tied to a significant degree to achievements in the biological sciences, especially in selection, the development of new varieties of plants and breeds of animals. Soviet selection is making a substantial contribution to the realization of the Food Program. During the 10th Five-Year Plan over 730 varieties and hybrids of agricultural crops were designated for specific regions; these included high-yield varieties of winter and spring wheat. The USSR is one of the top developers of such crops in the world. Livestock breeding is also assigned immense importance. During the 10th Five-Year Plan over 30 lines of cattle were developed; a new stud type of Holstein cattle was developed, as were new

breeds of pigs. New methods for accelerating selection and increasing the efficiency of heterosis were developed.

Research conducted at institutes of the USSR Academy of Sciences and the Union republic academies of sciences played a substantial role in the intensification of work on selection. This was primarily work done on induced mutagenesis, remote hybridization, and physiology. Today rational utilization of genetic information determines to a significant degree the result of the technological selection process. One of the most important achievements of selection is the development of semi-dwarf varieties of an intensive type of winter wheat (Semi-dwarf 49, Odessa semi-dwarf). Research on remote hybridization and polyploidy has made it possible to obtain highly productive varieties of the feed grain triticale--a new type of plant developed by man that is a hybrid of wheat and rye. Varieties of winter triticale are being introduced and initial success has been achieved in the selection of spring triticale. The application of contemporary genetic methods has played an important role in the selection of winter and spring barley, the most important grain forage crop in our country. High-yield varieties of spring barley, such as Temp, Odessa-110, the immune variety Pervenets [Champion], and others, have been developed.

In recent years there has been an increase in the amount of fundamental work done by academic institutes in cooperation with institutions of the USSR Ministry of Agriculture, the Academy of Agricultural Sciences imeni V. I. Lenin, and others. For example, work on fundamental problems of chemical mutagenesis made it possible to create around 100 new varieties of valuable agricultural crops, 30 of which have already been designated for specific regions. In cooperation with institutions of the USSR Ministry of Agriculture and the Academy of Agricultural Sciences imeni V. I. Lenin, the following developments have been achieved: the Novosibirsk-67 varieties of spring wheat; the Siberian 4TB early-ripening corn hybrid; the Siberian feed winter feed rye; a new mutant variety of peas; an interlinear diploid hybrid of sugar beets, Siberian-1; the Beregovchanka and Pervenets soy varieties; new breed groups of sheep for meat and wool with crossbred wool; and Landrace hog hybrids for industrial complexes. The early-ripening Yenisey sunflower variety has been improved; highly productive and disease-resistant potato varieties have been developed. Methods for microbiological protection of tomatoes have been developed; genetic research has been conducted on groups of salmon, and so on. In Moldavia complex work is being done on the genetic foundations of the formation of highly productive agricultural cenospecies. It is necessary to continue working on the genetics of quantitative indications, on protein polymorphism, and on heterosis. Not enough work is being done on the genetics of immunity. It is also necessary to expand work being done in the area of polyploidy, remote hybridization, apomixis, and haploidy; and to continue the search for new mutagens, and to activate work on the genetics of ontogenesis.

In order to realize the Food Program, it is necessary to do the following: strengthen coordination of operations among academic institutes and selection centers; put into practice the most important fundamental developments that have already been made; expand research on the particular genetics of the most valuable types of animals and plants, and on population and evolutionary genetics as the theoretical foundation of selection, to include new physical,

chemical and molecular methods and mathematical modelling of the selection and genetic processes; and develop work on genetic engineering and biotechnology.

Ye. N. Polivanova (Evolutionary Morphology and Ecology of Animals Institute of the USSR Academy of Sciences) presented the paper "Research and Application Prospects in the Battle Against Pests, Using Compounds that Alter the Development and Behavior of Insects", which dealt with problems of creating chemical means for protecting plants and animals that are less dangerous to man and the natural environment--hormones, pheromones, and physiologically active substances. There are great losses in harvests due to agricultural crop pests, and no less than one-half of these losses result from the harmful action of insects. Use of pesticides leads not only to pollution of the environment, but also to the development of insects resistant to pesticides and to destruction of useful insects--pollinators and entomophagous insects--which in turn results in prolonged outbreaks of mass reproducation of pests. Research by Soviet and foreign scientists has shown that juvenile hormones, pheromones, precocenes, and their analogs are capable of disrupting embryonic development, inhibiting metamorphosis, and stopping the diapause of insects, by influencing their hormonal balance and causing sterilization and pathological development of their organs. Models of the processes of communication have been proposed, and the roles of various factors have been analyzed. Methods are being developed for applying sex pheromones of harmful insects with the aim of reducing the number of pests (the harmful chinch bug, cotton, alfalfa, cabbage and winter crop moths). Sex pheromones are used to make predictions of the size of insect populations, which is of extreme importance for proper organization of protective measures that should be an integral element in an integrated system for the protection of agricultural crops. Measures are being developed to protect grain and other agricultural crops. Research on chiromones (a means for interspecies chemical communication, which helps insect parasites find their host), has shown that they can also be used to increase the effectiveness of biological methods for combatting agricultural pests.

O. V. Kovalev presented the paper "Biogeocenological Foundations of an Integrated Campaign Against Pests and Weeds" (Ye. S. Sugonyayev, coauthor, Zoological Institute of the USSR Academy of Sciences). Extensive use of pesticides in the battle against pests and weeds disturbs natural connections in ecosystems and threatens animate nature. These problems can be solved only by taking a biogeocenological approach to protecting plants on the basis of developing biological methods for suppressing harmful species--this should be one of the most important components in an integrated system for combatting pests. The basis of this kind of system was provided by the study of agrocenogenesis, done in our country in the 1930s and 1940s by M. S. Gilyarov. An integrated system for protecting cotton from harmful arthropods was studied and developed.

An analysis of the distribution of a persistent weed--ambrosia--in North America, where this weed grows natively, made it possible for the first time in world practice to obtain positive results in the suppression of wormwood-leaf ambrosia and to control its multiplication by acclimatizing a phytophagous insect, the ambrosia leaf-cutting beetle, which destroys the weed's shoots and sprouts, and strengthens the competitive role of crops in agrocenogenesis. A program is being developed for the colonization of the leaf-cutting beetle in

all the zones of the USSR infested by ambrosia. This new method makes it possible to reduce significantly the expenditures on the battle against weeds without breeding the phytophagous insects in laboratory conditions and without planning their mass supply from other countries. The ambrosia leaf-cutting beetle has already been acclimatized in a significant area of the northern Caucasus and southern Ukraine.

N. I. P'yavchenko, corresponding member of the USSR Academy of Sciences, presented the paper "Ways to Utilize Peat Bogs in Agriculture". The peat bogs in the northern oblasts of the RSFSR, Belorussia, the Baltic republics, and Siberia, comprise a large reserve for expanding the area of land under cultivation. Drainage of swamps and marshlands has been developed on a broad scale by means of construction of land reclamation systems, the primary purpose of which is to provide optimal conditions for cultivation of agricultural crops. With the implementation of a complex of land reclamation and agrotechnical measures, kolkhozes and sovkhozes can obtain stable harvests of grain, potatoes, sugar beets, fodder root crops, and hay from perennial grasses. There are other ways to utilize peat bogs in agriculture, including preparation of organic and organomineral fertilizers, litter for livestock and preparation of hydrolyzed feed sugar and feed yeast from sphagnum peat that is not very decomposed. The paper also discussed ways to utilize different types of peat bogs as land resources. The need to intensify overall research and to create a coordinating scientific center was emphasized.

M. V. Gorlenko, corresponding member of the USSR Academy of Sciences, presented the paper "Fungi as a Source of Food Protein", in which he pointed out that the shortage of food protein can be reduced by industrial production of edible fungi grown in hothouses and mycelia of edible fungi can be grown in liquid nutrient media. Mycelia of edible fungi obtained under mass production conditions do not differ in terms of nutritional properties from those occuring naturally. The genetics of edible fungi have not been studied sufficiently and selection of new varieties is also weak. The two-spore mushroom is bred the most, with the spring, summer and winter honey agarics being bred less. It is necessary to expand the types of edible fungi being cultivated, to study their biology, growth in culture, and methods of cultivation. It was emphasized that genetics institutes of the USSR Academy of Sciences and of the Union republic academies need to participate in this work. L. Yu. Budantsev, of the Botanical Institute imeni V. L. Komarov of the USSR Academy of Sciences, presented the paper "Academic Botany and its Role in the Realization of the Food Program", which summarized the primary results of fundamental and applied research at the Botanical Institute imeni V. L. Komarov of the USSR Academy of Sciences, the main coordinating center for Soviet academic botany. One of the most important factors in increasing the intensity and productivity of all sectors of agricultural production is the rational use and protection of plant resources. The fundamental studies "The Flora of the European USSR", "The Arctic Flora of the USSR", "The Sporiferous Flora", "Cereals of the USSR", "Useful and Harmful Foreign Plants in the USSR's Nonchernozem Region", "Ash in the USSR--Edible and Medicinal Plants", and "Sedges in the USSR", serve as a scientific basis for expanding the search for new, additional sources of agricultural production by making use of wild flora. The "Map of the Vegetation of the European USSR", "Geobotanical Map of the RSFSR Nonchernozem Region", "Map of the Vegetation of the Steppe Region of the Kazakh Scrub Land", and others, are of great practical

importance in the rational utilization of resources of the natural vegetation covering various climatic zones of the USSR. Maps are used widely in planning utilization of land and plant resources, in carrying out economic measures such as surveying pastures and land under cultivation, improving lands for planting various agricultural crops, in land reclamation measures, in restoring timber reserves, and in forest cultivation. Research is being done to find new sources of biologically active products in the vital activity of plants and fungi. Scientific foundations are being developed for meadow and pasture management. Material has been prepared on "The Natural Haying Areas and Pastures of the USSR and Prospects for Improving their Quality and Increasing their Productivity". Research is being done on new fodder plants, making use of natural sources (the Sosnovskiy and Pontiyskiy beet root, the Veyrich and Zabaykal'skiy highlander, and others). Recommendations have been developed for rational utilization of pastures in the Kara Kum desert. Biological bases are being developed for the battle against diseases and pests of agricultural crops. Work is continuing on fundamental reearch on the effect of large livestock complexes on surrounding vegetation. A number of new plants have been chosen for the liquer industry, and so on.

V. N. Orlov (Evolutionary Morphology and Ecology of Animals Institute of the USSR Academy of Sciences) participated in the discussion of the papers. He pointed out that the Institute is already working out the foundations of a national program "Cytogenic Monitoring in Pure-Strain Livestock Breeding". Implementation of this program will raise pure-strain livestock breeding to a qualitatively new level, which will make it possible to utilize in practice the achievements of contemporay experimental biology, genetics, and evolution theory. Yu. P. Altukhov (General Genetics Institute of the USSR Academy of Sciences) discussed questions of developing fish genetics. The genetic structure of populations of Pacific Ocean salmon has been studied. A model of genetically possible acclimatization has been developed and the corresponding recommendations are being implemented. S. E. Vomperskiy (Forestry Laboratory of the USSR Academy of Sciences) concentrated on the question of developing recommendations for land reclamation and irrigation-free timber agricultural development of land in the semi-arid complex of the northern part of the Caspian lowland. Experimental timber agricultural ecosystems have been created, which provide higher and more stable grain yields. Satisfactory grain and perennial grass harvests have been obtained in Volgograd Oblast on the basis of these recommendations.

After the concluding remarks by M. S. Gilyarov, the General Meeting adopted a resolution which noted that successful realization of the Food Program is possible only on the basis of developing biological and applied research in a number of sectors of the natural sciences and by accelerating the introduction of scientific research results into practice throughout agriculture. In recent years the institutions of the General Biology Department have conducted important theoretical research and have developed concrete recommendations that will help increase crop yields and productivity in livestock breeding. It is the duty of the scientists of the General Biology Department to find additional opportunities for intensifying scientific research directed at solving the tasks set before science by the USSR Food Program.

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9967
CSO: 1840/439

INADEQUATE PROVISION OF MEASURING SPOONS FOR INFANT FORMULA

Moscow PRAVDA in Russian 27 May 83 p 3

[Article by A. Androshin and B. Mironov: "Not Just About a Spoon"]

> [Text] "I began feeding my two-month-old son the dry formula Detolakt, which recently appeared in stores in our city. The baby likes it, but here is the problem: he broke out in a rash all over his body. The physician says that the cause is in an incorrect dosage of the product. And he is right: I determined the necessary amount of the formula by eye because there was no measuring spoon, although judging by the label on the box it should have been sold along with the Detolakt..." (From the letter of O. Sviridova, Moscow).

The production of Detolakt, a dry formula maximally approximating the composition of mother's milk, began slightly more than one year ago in the city of Balta in Odessa Oblast at the nation's largest industrial complex specializing in children's nutrition. Acoording to the evaluations of physician pediatricians, the formula is the most perfected of all children's products and assures the full development of infant patients requiring artificial feeding from the very first days of life.

In a word, the new product promised to reduce considerably the worries of mothers with nursing infants. But, unfortunately, there have been constant problems with Detolakt. First, difficulties with the raw material for its production; then, it all ended up in Ukrainian stores, and only after the intervention of PRAVDA was the geography of the formula's sale expanded. And now the problem of the spoon; common, plastic, nearly weightless, but without which, it turned out, the necessary dose of the product is difficult to measure out. It was initially proposed at the Balta industrial complex that spoons be included in each box. But technical problems arose, and they decided to make life easier for themselves, having concluded that nothing in particular would happen if there were no spoon. However, the workers of the USSR Ministry of Health, to whom we turned for consultation, are of an entirely different opinion.

"We receive many signals similar to O. Sviridova's letter," says the Chief Specialist of the Main Administration of Therapeutic and Prophylactic Aid to Children and Mothers, L. Druzhinina. "The correct dosage is very important in using Detolakt. Mistakes can lead to undesirable consequences for infants. Throughout the world in the production of such products a measuring spoon is included in each package, as was considered in Balta. However, the USSR Ministry of the Meat and Dairy Industry, to which the enterprise is subordinate, did not fulfill the necessary conditions. The question of measuring spoons was repeatedly raised at sessions of the Interdepartmental Commission on Children's Nutrition under the USSR Ministry of Health, but the necessary measures have not been taken.

"True, the USSR Ministry of the Meat and Dairy Industry and the Ministry of Trade agreed with one another to supply spoons to the stores along with large consignments of the products. In this case, the small spoons make extensive journeys. First they leave Omsk and Kazan, where they are produced, for the Ukraine and Balta, then along with Detolakt they are sent to the various addresses.

"We are against such practice," L. Druzhinina announced categorically. "Several varieties of Detolakt will be produced in the near future. Each formula will require a spoon of different volume. Their sale separately from the product will lead to mistakes in dosage. In addition, it was determined that the spoons do not always reach the consumers."

In fact, we visited a good 10 Moscow stores selling Detolakt and found these spoons in only two. There were no spoons at all in the other stores. Yes, but they should have been found somewhere, as the industrial complex was to have obtained 5.2 million spoons from the Soyuzmyasomoltara Association during the less than five months of the current year. But they received only 343,000...

But the solution here, say the specialists, is simple and economical: set up at the Balta industrial complex several thermoplastic apparatuses, which will stamp out the requisite quantity of spoons. And it will not be necessary to make an unnecessary fuss, to burden the railroads and salespeople and in the final analysis nullify the effectiveness of Detolakt. However, the branch supervisors as before do not want to take upon themselves "superfluous" concerns.

There is yet another reason why we have discussed the spoons in such detail. The children's nutrition industry is a young branch in the food industry. However, it still has many such "trifles" that inhibit its development. Among the "trifles" are th absence of a number of components for the production of products necessary for infants such as sodium citrate, calcium hydroxide, certain vitamins and vegetable oils. And the eternal problem of glass jars of small capacity and the shortage of varnishes for containers and anodized rolling from aluminum for packing the formulas... And now the measuring spoons. Does not all of the foregoing suggest that the ministries and departments called upon to make our children's menu tasty and diverse have not yet found a common language with one another, while they for the most part regard the job given them as an annoying burden?

9942
CSO: 1840/422

SOVIET-AMERICAN SYMPOSIUM IN ALMA-ATA ON PLANT PROTEINS AND NUTRITION

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 26 Feb 83 p 3

[Article by Kazakh Telegraph Agency correspondent N. Idrisov: "The Protein Problem"]

[Text] The problems of the biomedical evaluation of new types of products that use pure soy protein and other protein sources were discussed by the participants of a Soviet-American symposium, completed on 25 February in Alma-Ata. It was conducted by the USSR Ministry of Health, the USSR Academy of Medical Sciences, the Ralston Purina Company, the Institute of Nutrition of the USSR Academy of Medical Sciences and the Kazakh Branch of the latter institute.

The importance of scientific contacts and cooperation between scientists and specialists in the Soviet Union and USA was noted, particularly in searching for new sources of food protein. Questions were discussed concerning the coordination and improvement of individual methodological approaches to the resolution of current problems facing chemists, biochemists, immunologists and technologists. A series of reports were heard from American and Soviet scientists relating to various directions in the solution of this problem.

The results of the work of the symposium were commented on by K. S. Ladodo, supervisor of the Children's Nutrition Department, Institute of Nutrition, USSR Academy of Medical Sciences:

"For a number of years the Institute of Nutrition, USSR Academy of Medical Sciences has studied long-standing problems jointly with American specialists. Similar work is done at the Kazakh Branch of our institute."

The American scientists at the symposium told of experience in studying the chemical composition of soy and other plant proteins, in creating protein mixtures and products and their use in the nutrition of healthy and sick children.

Says the leader of the American delegation, Professor D. (Weggle):

"The symposium discussed extremely useful questions. Alma-Ata was chosen as the site for holding the symposium not only because this is a beautiful city, but primarily because research of great mutual interest is conducted here. The reports given by scientists of the Institute of Nutrition, USSR Academy of Medical Sciences and its Kazakh Branch characterized a thorough study of the influence on the organism of various plant proteins, including soy, and, also, of products to which plant proteins are added. They agree nicely with our studies. The symposium refined plans for further scientific cooperation."

I think that the relations between the USSR and USA should be friendly and constructed on mutual understanding and a constant striving for peace. Undoubtedly, this can be promoted by the exchange of scientific accomplishments.

9942
CSO: 1840/430

UDC 665.347.8.002.3(470):658.016.4

DISTRIBUTION AND CONCENTRATION OF SUNFLOWER PRODUCTION IN THE RSFSR

Moscow MASLO-ZHIROVAYA PROMYSHLENNOST' in Russian No 3, Mar 83 pp 28-31

GONCHAROV, V. D., candidate of economic sciences, and VIL'KOVISKAYA, L. V., All-Union Scientific Research Institute of Agricultural Economics

[Abstract] In 1980 sunflower purchases accounted for 84.3% of the State purchases of oil-producing plants, and this crop represents the most important category of such crops in the RSFSR. Approximately 95% of the cultivated sunflower lands in the RSFSR are located in the North-Caucasian, Central-Chernozem and Volga regions. However, the current area allocated to sunflower cultivation represents a 13% decrease in comparison with 1965, which is particularly troublesome in view of the shortage of such crops in the USSR. To a large extent this has been due to mismanagement, poor planning, misplaced allocation of resources, and poor agricultural techniques which have had a negative impact on the cost-effectiveness of this crop. In order to improve the situation, the acreage allocated to this crop should be expanded in areas with favorable climatic conditions, and greater effort must be made by geneticists and breeders to produce superior strains of sunflower. At the more local level, considerable attention should be given to a more rational allocation of land for grain crops, sugar beets, and sunflower in the RSFSR.
[348-12172]

UDC 612.648.015.6:577.161.3]-06:613.953.1+616-053.32-083.2-07:616.153:577.161.3

VITAMIN E SUPPLY OF FULL TERM AND PREMATURE INFANTS IN VARIOUS TYPES OF FEEDING

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 82
(manuscript received 18 Mar 82) pp 56-59

SADYRBAYEVA, Z. S., BLAZHEYEVICH, N. V., LADODO, K. S. and SPIRICHEV, V. B., Institute of Pediatry, USSR Academy of Medical Sciences, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] Because of the importance of vitamin E in early development in infants, a comparison was carried out of various milk substitutes with respect to their ability to provide adequate levels of tocopherol. Twenty full term and 52 premature babies were studied while being maintained on mother's milk and on various milk substitutes: "Malyutka" based on milk and corn fat, a newly modified "Malyutka" - "M-2" with the fat base of milk fat, lard and sunflower oil, and "Similac" based on cocoanut and corn oils. The background level of vitamin E showed a direct relationship to the gestational period of these infants: in premature 33-35 week babies it was 0.55±0.04, in the 36-37 week group it was 0.68+0.03 and in full term infants it was 0.84±0.045 mg/100 ml. Full term infants maintained on Similac showed the highest levels of tocopherol, while those on "M-2" actually exhibited lower levels than those on mother's milk. Among the premature babies the best results were obtained through natural breast feeding, followed by Similac. Infants fed "M-2" had a much lower level of tocopherol in blood. References 23 (Western).
[437-7813]

UDC 616.391-008.64:[577.16+547.96]-07:616-008.92:[546.41+546.8]-074

PRINCIPAL INDICES OF CALCIUM AND PHOSPHORUS BALANCE IN DIFFERENT FORMS OF PROTEIN-VITAMIN DEFICIENCY

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 82
(manuscript received 2 Dec 81) pp 43-47

TAZHIBAYEV, Sh. S. and MAMYRBAYEV, A. A., Kazakh Branch of the Institute of Nutrition, USSR Academy of Medical Sciences, Alma-Ata

[Abstract] Principal indices of calcium and phosphorus balance in growing rats were studied. The rats were maintained on a nutrition regimen from which various vitamins and proteins were selectively withdrawn. A control group was maintained on normal diet, while one group was exposed to polyhypovitaminosis: A, D, B_1, B_2 and B_6 vitamins were withdrawn from its diet. It was shown that deficiency of vitamins D and B_6 led to lower calcium levels in blood. Phosphorus levels were depressed with absence of any of the vitamins studied. Protein insufficiency was also reflected in hypocalcemia and hypophosphatemia. Combination of hypovitaminosis with

protein deficiency led to an additive effect on lowering calcium and phosphorus levels. The mechanism of this interdependence is complex. The drop in calcium and phosphorus levels may be due to their lower intestinal adsorption or possibly to greater excretion from the body. References 11: 10 Russian, 1 Western.
[437-7813]

UDC 612.395.1:[612.398:613.263:633.34

CLINICO-EXPERIMENTAL STUDY OF HUMAN ALIMENTARY STATUS UNDER DIFFERENT RATES OF CONSUMPTION OF SOYBEAN PROTEIN

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 82
(manuscript received 10 Mar 82) pp 27-33

YATSYSHINA, T. A., BRENTS, M. Ya. and MAMAYEVA, Ye. M., Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] Studying the physiological adequacy of soybean-protein isolate in comparison to traditional protein products, and the effect of megaquantities of this agent in human food on clinical, biochemical and immunological status of the organism, a 52-day study was performed on 7 volunteers, healthy men aged 27-42 years. The results have shown that it is possible to use soybean isolate as a human nutrient; soybean protein was assimilated adequately and showed high nutritional value. The assimilation of protein increased dramatically during optimal caloric intake. Energy deficiency led to irrational loss of consumed protein. Figures 2; references 23: 6 Russsian, 17 Western.
[437-7813]

UDC 612.017.1-06:612.39+612.392.017.1

NUTRITION AND IMMUNITY

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 82
(manuscript received 9 Feb 82) pp 3-8

SHARMANOV, T, Sh., Kazakh Branch of the Institute of Nutrition, USSR Academy of Medical Sciences, Alma-Ata

[Abstract] The goal of this review was to point out an interesting and productive field of investigation--immunology of nutrition. This problem can be stated in two parts: effects of nutrition on immunity and studies of the mechanisms of immunologic phenomena connected with food and assimilation of nutrients carrying a foreign antigenic information. Most of the current studies are centered on the first problem since it is directly related to practical health care. At the same time, the mechanism

and prognostic value of immunological indices during protein insufficiency are unclear and controversial. One of the principal problems is that the experiments designed to model alimentary deficiencies often show a disproportion between morphometric indicators of experimental animals and reality. A special interest concerns studies devoted to qualitative protein insufficiency caused by utilization of proteins with deficient content of essential aminoacids. Thus, if food is to be considered as a compilation of antigens accessible to the immune system, the interaction between food and organism contains elements of immunologic reactivity towards antigens. References 46: 13 Russian (4 by Western authors), 33 Western.
[437-7813]

UDC 614.31:[615.918:582.28]-074

ORGANIZATION OF A CONTROL SYSTEM FOR FOOD CONTAMINATION WITH MYCOTOXINS

Moscow VOPROSY PITANIYA in Russian No 5, Sep-Oct 82
(manuscript received 5 Feb 82) pp 16-23

KRAVCHENKO, L. V. and TUTEL'YAN, V. A., Laboratory of Nutritional Enzymology, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] Currently there are many reliable indicators of the danger from mycotoxins to human health. Among them the foremost are aflatoxins, sterigmatocistins, ochertoxins, patulins, trichothecenes, citrinins and zearolenones. The aflatoxins especially have been noted in food products and feed in many countries. One must remember that mycotoxin producers may infect food products at a number of production stages; in the field, during harvesting, transportation or storage, in the preparation phase, etc. A number of specific mycotoxins were reviewed. The principal tasks from the point of view of public health are those of prevention of food contamination at any one of the above cited steps. Maximum permissible levels of these toxins were reported. References 23: 7 Russian, 16 Western.
[437-7813]

LATVIAN GENETICS LABORATORY CONTRIBUTES TO USSR FOOD PROGRAM

Riga SOVETSKAYA LATVIYA in Russian 12 Mar 83 p 2

[Article by V. Dishler, doctor of biological sciences, head of the Genetics Laboratory at the Institute of Biology of the Latvian SSR Academy of Sciences: "Genetics and Selection"]

[Text] The USSR Food Program sets out the tasks of increasing and stabilizing high crop yields, which are to be achieved through crop resistance to unfavorable weather conditions, diseases, pests and weeds.

Stabilizing yields is much more important than achieving occasional records. It requires a knowledge of the biological development mechanisms for crops and a knowledge of their heredity; it also requires the development of new methods for obtaining plants with the most favorable combinations of attributes and the maximum utilization of the possibilities of the worldwide gene pool for crop plants and their wild relatives. Consequently, it is essential to have appropriate methods for altering combinations of yield and resistance traits, which have been created by the lengthy processes of evolution and selection, as well as methods for selecting and evaluating plants at the first stages of the selection process.

These are the problems now facing many of the sectors of biology--genetics, cytology, botany, phytopathology, physiology, mathematical and molecular biology and biochemistry. In our era, selection has become a science, the success of which lies in the coordinated utilization of the achievements of various sectors of biology and a number of applied disciplines.

There is every reason to consider genetics as the main theoretical basis of selection. It studies the patterns and mechanisms for the inheritance of organisms' traits and properties, resolves selection problems and develops new methods for the selection of plants, animals and micro-organisms.

Studies carried out in the genetics laboratory at the Institute of Biology of the Latvian SSR Academy of Sciences are based on the connection between biology and breeding practice. One main trend involves studying opportunities for breeding strains of barley which are disease-resistant. It has been learned that new strains lose their disease resistance with time, and this leads to great crop losses over significant areas, which have been sown with plants of one strain. The pathogenic agents--parasitic micro-organisms-are not uniform: from generation to generation they change

in their capacity to infect plants, overcoming the resistance of previously unaffected varieties of barley. Further, the racial composition of microbes under different climatic condition and in different geographical zones has proved to be characteristic of a given locality. That is why selection of new plants which can resist diseases necessarily involves as a first step the determination of the resistance characteristics of various crop varieties as well as the resistance of their wild relatives. At the same time the racial composition of parasitic micro-organisms populations is also being studied.

Specialists at the genetics laboratory have determined that our republic has several endemic strains of agents which cause downy mildew, that is, strains which are encountered only in the Baltic area. We have succeeded in breeding artificial barley mutants which possess comprehensive, stable resistance to downy mildew and smut. These mutants have been handed over to the republic's selection institutions.

And now, when the task of stabilizing field crop yields by increasing their adaptation has been set out, research in the area of induced recombinogenesis is acquiring particular significance. The goal is to study the processes leading to the recombination of traits and properties of parent plants in the hybrid offspring, as well as to work out methods to strengthen these processes experimentally. Researchers at the laboratory have worked on these projects for several years. As a result, the basic patterns of combination mutability have been revealed, new active recombination genes have been discovered, and methods have been worked out for the combining of traits which now add to the arsenal of plant selection means. The genetics laboratory has used these methods to breed strains of barley which possess such valuable properties as a reduced vegetation period, shortened stalks and a firm root system.

These strains have also been put at the disposal of breeders. As the central figure in the process of creating a plant variety, the breeder must have a good knowledge of the achievements of biological and technical sciences. For this reason the formulation and successful implementation of breeding programs brings success only where there is fruitful cooperation between scientists and breeders. The "Baltkhordeum" Program can serve as an example of this. Within the framework of this program, which is conducted according to a unified plan developed by the Institute of Biology, breeding institutions in the Latvian, Estonian and Belorussian SSR's are studying problems of barley genetics and selection. The work focuses mainly on the inheritance patterns for a set of productivity attributes, and maximal opportunities for improving barley varieties by means of hybridization are being discovered. Using contracts as the basis for joint scientific work, the genetic scientists of our institute have cooperated with breeders in conducting research into the basic properties which influence yields of oats, fodder grasses, currants,and commercially useful tree species.

Work on selection constitutes a noble mission for the biologist. It not only contributes to the raising of our fields' productivity, but also helps in decreasing the use of toxic chemicals and other plant protection means which are expensive and harmful to the environment.

8543
CSO: 1840/515

UDC 576.858.6

CLONING AND CHARACTERISTICS OF C TYPE PROVIRUS FROM MOUSE ERYTHROLEUKEMIC CELLS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 268, No 6, Feb 83 (manuscript received 9 Aug 82) pp 1478-1480

NEZNANOV, N. S., KOLOBKOV, S. L., DOMNINSKIY, D. A., GAZARYAN, K. G. and GRINEVA, N. I., Central Scientific Research Institute of Hematology and Blood Transfusion; Institute of Molecular Genetics, USSR Academy of Sciences; All-Union Oncologic Scientific Center, USSR Academy of Medical Sciences, Moscow

[Abstract] Studies were conducted on the cloning and characterization of C type provirus from murine erythroleukemic cells, using C-1 cells derived from splenic cells of AKR mice infected with Rauscher's retrovirus which produced noninfectious defective C type particles. Cloning of the C type provirus was based on treating the C-1 cell DNA with the restrictase EcoRI and subsequent ligation with the 'shoulder' DNA of vector phage Charon 4A and eventual production of recombinant phages by standard methods. Screening of the recombinants with ^{32}P-cDNA obtained by reverse transcription of Rauscher murine leukemia virus led to the identification of 34 clones which contained proviral sequences hybridizing with the ^{32}P-cDNA. None of the clones had sequences equal in length to the entire length of the C type provirus. In the case of three clones the proviral sequences were separated from cellular DNA sequences at both ends by LTR repetitions and were confirmed by restriction mapping to represent deletion mutants of the mouse leukemia proviruses. Figures 3; references 12: 3 Russian, 8 Western. [347-12172]

UDC 576.2

MOLECULAR CLONING AND STRUCTURE OF RAT DNA FRAGMENTS HOMOLOGOUS TO MURINE SARCOMA VIRUS MOS ONCOGENE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 268, No 6, Feb 83 (manuscript received 11 Aug 82) pp 1480-1482

SAYANOVA, O. V., PRASOLOV, V. S., ZABAROVSKIY, Ye. R. and CHUMAKOV, I. M., Institute of Molecular Biology, USSR Academy of Sciences, Moscow

[Abstract] Studies were conducted on the structural organization and cloning of c-mos (c = cellular) oncogene of rat hepatocytes by the construction of recombinant Charon A4 phages containing inserts of hepatocyte DNA. Subsequent analysis involved molecular hybridization with ^{32}P-cDNA derived from 30S RNA of Moloney murine sarcoma virus by reverse transcription. Testing of the recombinant phages led to the isolation of eight clones showing homology with the viral genome. At least four structurally different genes were present in the rat genome which showed homology with the v-mos (v = viral) oncogene, suggesting marked amplificagion of the c-mos gene. Such amplification could at least in part be ascribed to recombination of the c-mos gene with the retroviral genome and subsequent infection by the recombinant viruses of embryonic rat cells. Figures 3; references 14: 3 Russian, 11 Western.
[347-12172]

UDC 547.96

PROTEIN POLYMORPHISM AND ITS SIGNIFICANCE FOR GENETICS AND BREEDING

Moscow VESTNIK AKADEMII NAUK SSSR in Russian No 11, 1982 pp 18-29

SOZINOV, A. A., academician of the UkSSR Academy of Sciences and the Lenin All-Union Academy of Agricultural Sciences

[Abstract] Currently polymorphism is regarded by geneticists to be controlled by allele states of genes or super-genes. Despite continuing study on various plants and animals to determine biotic and abiotic stress resistance, quality and yield of grain, etc., a key factor remains intuition rather than predictable patterns. In his report before the USSR Academy of Sciences Presidium, the author stressed new possibilities opened up by use of modern procedures such as electrophoresis on gelatin media. The genetic, as opposed to environmental, determinants have been shown to be primary. Blocks of proteins that inherit chains of characteristics over many generations with only rare recombinations are examined using examples of winter wheat loci which determine gliadin code features on the chromosomes. The connections between allelism and changes in important economic parameters of "Mironovskaya 808" and other wheat strains are discussed. For example,

the G1d1D4 block is related to nitrogen accumulation that in turn governs protein content. Clear distinctions are noted between the allele selection approaches of individual plant breeders in various countries. This notion is demonstrated on the basis of breeding for hordein in the USA, Eastern Europe and the USSR. Recent developments in genetics and molecular biology have important meaning for intensified plant breeding. Physico-chemical features related to DNA and RNA are also being studied for purposes of animal breeding and cloning research for cattle, horses, sheep and poultry. Other research is directed athhuman genetics and its relation to the origin and adaptation of the species. Comments and reservations from the audience are presented. Figures 5.
[467-12131]

UDC 575.313

EFFECT OF PLASMID pKM101 ON K-SPECIFIC RESTRICTION/MODIFICATION OF BACTERIOPHAGE LAMBDA DNA

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 269, No 3, Mar 83 (manuscript received 6 Sep 82) pp 738-741

BELOGUROV, A. A. and ZAVIL'GEL'SKIY, G. B., Institute of Molecular Biology, USSR Academy of Sciences, Moscow

[Abstract] Genetic engineering studies on restriction of phage lambda in E. coli K-12 cells have led to the discovery that plasmid pKM101 contains a gene responsible for attenuating K restriction vis-a-vis phage lambda DNA. The gene, designated Ard (alleviation of restriction of DNA) shows considerable specificity in that lambda DNA restriction was decreased 100-fold only in the K strain, and that no protection was offered for restriction by EcoB or the EcorRI, EcoRII, EcoRIII or EcoRIV restrictases. Mapping studies with deletion mutants of pKM101 have sugtested that the Ard gene is located in the proximity of the Rep gene (autonomic replication gene) and Ap^R gene. Further studies are being conducted with one mutant (pTB) define the Ard site. Figures 2; references 14 (Western).
[346-12172]

UDC 576.8.851.155

PLASMIDS IN MORPHOLOGICAL MUTANTS OF STRAIN RHIZOBIUM LEGUMINOSARUM 897

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 270, No 1, May 83 (manuscript received 26 Jan 83) pp 236-238

ZLOTNIKOV, K. M. and BAYEV, academician, Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Abstract] A study of slime-free mutants in R. leguminosarum involved isolation of them, checking them for symbiotic properties and for the presence of endemitnic plasmids. Strain R. leguminosarum 897 (phe-1, trp-12, str-37) and strain T3 (ura-14, trp-16, str-86), carrying Tn5-transposone marked conjugative plasmid pJ pJB5JI, both of which are derivatives of R. leguminosarum 300, were used in the study. Isolated mutants were arbitrarily typed as GL or JF. It was found that the phenotype of isolated mutants GL and JF obviously is not connected with loss of endemitnic plasmids in cells of the bacteria. Mutants GL and JF No 1,3,5 evidently are punctate since revertants to the wild type were isolated after passage of them on tuberous plants. Location of the isolated mutations in the genome of the cells will require appropriate genetic mapping. References 11 (Western).
[463-2791]

STUDY OF IMMUNOLOGIC REACTIONS BY RESONANT LIGHT SCATTERING

Moscow BIOFIZIKA in Russian Vol 28, No 3, May-Jun 83
(manuscript received 10 Jun 82) pp 494-495

DUBROVSKIY, V. A. and KALININ, Ye. V., Saratov State Medical Institute

[Abstract] A method is suggested for increasing the intensity of scattered radiation by performing the immunologic reaction being studied in a specially selected medium which is resonant with relationship to a probing laser beam. The use of resonance increases the intensity of light scattering and consequently increases the accuracy and expands the range of measurements. The possibility is shown in principle of increasing the intensity of scattered radiation and thus expanding the capabilities of the method of scattering for the diagnosis of immunologic reactions by the use of such resonant media. The method can be used not only for immunologic processes, but also for the diagnosis of other biological objects. References 6: 5 Russian, 1 Western.
[489-6508]

UDC 577.150.3+615.849.19

EFFECTS OF LOW INTENSITY LASER LIGHT ON ASPARTATE AMINOTRANSFERASE ACTIVITY IN RAT BRAIN AND LIVER

Minsk VYESTSI AKADEMII NAVUK BSSR in Belorussian No 4, Jul-Aug 82 (manuscript received 28 Jan 82) pp 78-81

LAVROVA, V. M., PIKULEV, A. Ts. and MOSTOVNIKOV, U. A., Belorussian State University imeni V. I. Lenin; Institute of Physics, Belorussian SSR Academy of Sciences

[Abstract] Investigations were conducted on the effects of low-intensity helium-neodymium laser (632.8 nm, 18 mW) irradiation of the parietal region of the rat brain with focused (0.1 cm^2) or unfocused (2 cm^2) beam for 15 or 30 min on aspartate aminotransferase (AAT) activity in the brain and the liver. Evaluation of cytosolic and mitochondrial AAT activities showed that the unfocused light tended to enhance both activities in the liver, with the exception that mitochondrial AAT activity in the liver was depressed after a 15 min exposure, in comparison with control activities. In the brain, cytosol activity was depressed by unfocused light and mitochondrial activity was enhanced. Focused laser light uniformly increased the activities of both fraction in the brain. In the liver, cytosol activity of AAT was slightly elevated after 15 min and mitochondrial activity was significantly depressed. With 30 min exposure, cytosolic hepatic AAT showed a statistically significant elevation, while the mitochondrial fraction was depressed. Figures 1; references 14: 10 Russian, 4 Western. [349-12172]

UDC 596.1:612.53+577.3

ENERGY EXCHANGE IN DIFFERENT PERIODS OF HUMAN DEVELOPMENT

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 9, No 1, Jan-Feb 83
(manuscript received 30 Nov 81) pp 25-32

KORNIYENKO, I. A., Scientific Research Institute of the Physiology of Children and Adolescents, USSR Academy of Pedagogical Sciences, Moscow

[Abstract] Post-natal ontogenesis was separated into periods on the basis of comparison of age-related changes of intensity of the basal metabolism. It was found that these periods are distinguished by various indicators characterizing energy possibilities at the cellular level and the tissue level and also by the nature of provision of energy for motor activity and thermoregulation. There was shown a relationship between the rate of reduction of metabolism intensity with age and the change of growth rates. Decrease of growth and increase or stabilization of metabolism were associated with processes of differentiation, accompanied by increased mitochondrial apparatus output. There was found a need for additional studies of the dynamics of development of mechanisms of neurohumoral regulation of functions of the internal organs, development of coordination and psychophysiological features. The period of sexual maturation is also a period which is difficult to classify and there is a need for additional studies to permit characterization of children at different stages of sexual maturation by physiological methods. Figures 2; references 31: 24 Russian, 7 Western. [476-2791]

CRANIAL CAVITY PRESSURE DISTRIBUTION

Moscow BIOFIZIKA in Russian Vol 28, No 3, May-Jun 83
(manuscript received 12 Sep 82) pp 489-493

PAL'TSEV, Ye. I., Institute of Information Transmission Problems, USSR Academy of Sciences, Moscow

[Abstract] It is natural to assume that the mean level of pressure in cerebral tissue is related primarily to the osmotic gradient between blood

plasma and interstitial fluid. However, the results of analysis of correlation relationships indicate weak correlation of these relationships. Consequently, the mean level of intracranial pressure of interstitial fluid in the surface layers of the brain is not established exclusively by osmotic mechanisms within the tissue. To explain the reduced intracranial pressure experimentally observed the authors set forth a concept that the binding structural elements of the brain and the envelopes play a "supporting" function. Structural elements implementing "radial" connections between the outer surfaces of the brain, envelopes and the skull surrounding it are important. The material substrate supporting this biomechanical connection is the collagen framework of the subarachnoid space, the trabeculae of these spaces binding the structures between the structural elements of the envelopes and the vascular network of the subarachnoid space and other elements. The supporting function in the creation of the reduced pressure is performed by the framework of the vascular and glial elements within the tissue.
Figures 3; references 11: 5 Russian, 6 Western.
[489-6508]

MICROBIOLOGY

PROSPECTS OF DEVELOPING THE MICROBIOLOGICAL INDUSTRY IN LIGHT OF THE MAY 1982 CPSU CENTRAL COMMITTEE PLENARY SESSION

Moscow MIKROBIOLOGIYA in Russian Vol 51, No 6, Nov-Dec 82 pp 889-895

RYCHKOV, R. S., Main Administration of the Microbiological Industry, USSR Council of Ministers

[Abstract] Measures for fulfilling the tasks set for the microbiological industry by the May 1982 CPSU Central Committee Plenary Session, which call for the increase of agricultural production, are mentioned and discussed in relation to the present state of works underway and the plans for future development. Major areas of activity discussed include: creation of the world's first large-tonnage production of feed yeast from liquid paraffins of oil; experimental testing of protein by improving efficiency of present production; energy saving measures; plans for producing new weed control agents; production of veterinary preparations and feed proteins from synthetic alcohol and natural gas; production of pure amino acids for medical purposes and the study of the collection, systematization and use of useful forms of microorganisms found in nature. The importance of these measures in ensuring fulfillment of the USSR Food Program for the period up to 1990 is discussed.
[440-2791]

UDC 582.232.095.38:576.851.9

EFFECT OF PETROLEUM HYDROCARBONS ON VIABILITY OF CYANOBACTERIA IN ASSOCIATION WITH OIL-OXIDIZING BACTERIA

Moscow MIKROBIOLOGIYA in Russian Vol 51, No 6, Nov-Dec 82
(manuscript received 11 Nov 81) pp 932-936

GUSEV, M. V., LIN'KOVA, M. A. and KORONELLI, T. V., Moscow State University imeni M. V. Lomonosov, Department of Biology

[Abstract] An algologically and bacterially pure culture of cyanobacteria Anabaena variabilis and a pure culture of oil-oxidizing bacteria Mycobacterium brevicale were grown and "Zimnee" diesel fuel was added to

the medium before the start of sterilization. Inoculate of oil-oxidizing bacteria and cyanobacteria were introduced into the experimental ecosystem simultaneously or after start of growth of one of the components. The microorganisms were cultivated in parallel, in light (2000 lux) and in dark, at 28 degrees. It was found that the viability of the phototropic organisms may be preserved only under conditions of functioning of the oil-oxidizing microflora. The experimental ecosystem had a high degree of self-purification and helped to control oil pollution but only within limits of concentrators which could be oxidized by the oil-oxidizing bacteria in a very short time. Figures 3; references 7: 6 Russian, 1 Western.
[440-2791]

UDC 576.851.132.095

DEGRADATION OF POLYCHLOROAROMATIC INSECTICIDES BY PSEUDOMONAS AERUGINOSA, CONTAINING BIODEGRADATION PLASMIDS

Moscow MIKROBIOLOGIYA in Russian Vol 51, No 6, Nov-Dec 82
(manuscript received 7 Nov 81) pp 973-978

GOLOVLEVA, L. A., PERTSOVA, R. N., BORONIN, A. M., GRISHCHENKOVA, V. G., BASKUNOV, B. P. and POLYAKOV, A. V., Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences

[Abstract] A study of degradation of DDT [1,1,1-trichloro-2,2-bis-(n-chlorphenyl)-ethane], its analogs and metabolites involv d the use of conjugation transfer to produce derivatives of P. aeruginosa 640x strains containing pBS2 and pBS3. Donors of these plasmids in cross breedings were P. putida BS240 containing plasmid pBS2 and P. putida BS245, containing pBS3 plasmid. The constructed strains grew on naphthaline and salicylate (initial strain 640x did not) and they grew more actively on pyrocatechin that the initial culture did. Neither grew on the other substrates studied. Kelthane was degraded more quickly by the constructed strains. Thus the study showed that introduction of plasmids pBS2 and pBS3 and the consequent interaction of genetic material of the plasmids and the chromosome produced strains with significant differences in the activity of the enzymes of oxidation of the aromatic ring and with the capacity to degrade DDT and its analogs more actively than the initial strain does. Figures 2; references 8: 4 Russian, 4 Western.
[440-2791]

UDC 576.8.095;547.912:550.72(470.41)

MICROBIOLOGICAL PROCESSES IN THE FACE ZONE OF DELIVERY WELLS OF OIL FIELDS

Moscow MIKROBIOLOGIYA in Russian Vol 51, No 6, Nov-Dec 82
(manuscript received 10 Dec 81) pp 997-1001

BELYAYEV, S. S., LAURINAVICHUS, K. S., OBRAZTSOVA, A. Ya., GORLATOV, S. N. and IVANOV, M. V., Institute of the Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences

[Abstract] A study of processes of oil oxidation and methane formation in the face zone of delivery wells in the Tatar ASSR and of factors which stimulate methane genesis in seam waters of exploited oil wells showed that addition of ammonium, phosphates and products of aerobic destruction of oil intensifies the activity of methane-forming bacteria in freshened waters of oil deposits. Activation of microbiological genesis of methane in the face zone by products of bacterial oxidation of residual oil was demonstrated. Bacterial formation of methane on products of aerobic microbiological destruction of oil was confirmed experimentally. References 20: 16 Russian, 4 Western.
[440-2791]

MOLECULAR BIOLOGY

NEW RESEARCH INSTITUTE OF PLANT MOLECULAR BIOLOGY AND BIOCHEMISTRY IN ALMA-ATA

Alma Ata KAZAKHSTANSKAYA PRAVDA in Russian 17 Apr 83 p 3

[Interview with Murat Abenovich Aytkhozhin, academician of the Kazakh SSR Academy of Sciences, on the opening of the Institute of Plant Molecular Biology and Biochemistry, in Alma-Ata, by KAZAKHSTANSKAYA PRAVDA correspondent V. Novikov: "Protein, the Cell and Life"; date not specified]

[Text] The new, 32nd in number, scientific research institution of the Kazakh SSR Academy of Sciences--the Institute of Plant Molecular Biology and Biochemistry--began its activity on these spring days.

The KAZAKHSTANSKAYA PRAVDA correspondent met with the director of this institute, Kazakh SSR Academy of Sciences Academician Murat Abenovich Aytkhozhin and asked him to discuss the new scientific collective, its plans and prospects.

[Question] Murat Abenovich, first of all, what necessitated the creation of an institute of this profile?

[Answer] Molecular biology is a science that in the past decade has confidently assumed advanced positions throughout the world. It arose at the boundary of biology, physics, chemistry and mathematics and incorporates them in equal measure. Its possibilities are fascinating.

Imagine: man constructs not only a living cell but also a protein molecule--the basis of life on earth. He creates a living organism with the pre-specified properties that he needs. And this is not fantasy but in many ways already reality. The concept of "genetic engineering" has become well known. We closely approach this in our research; this is our future. If our task is to be defined today, it is to investigate the regulation of protein biosynthesis, which is the scientific basis for solving a series of problems in increasing the protein productivity and quality of the harvest of agricultural plants.

It is now clear that the development of agriculture, medicine, and light and food industry will in a decisive manner be based on progress in molecular biology and genetics. This does not mean that our institute will "construct" new varieties. But we must develop the methods and technology of such construction, develop its fundamental bases.

[Question] The institute has become the third scientific institution of such profile in the nation's academic scienee. Why specifically in Alma Ata?

[Answer] In recent years a quite strong collective of scientists and specialists in the field of the molecular biology and biochemistry of plants has developed in the capital of the republic. They were mainly concentrated in the Botany Institute of the Kazakh SSR Academy of Sciences. Many of their developments have become quite widely known and recognized in our nation and abroad.

[Question] Among them, naturally, is your work, which was recognized in 1976 with a Lenin Prize?

[Answer] Yes, along with other scientists I was able to establish the existence of a new class of intracellular structures in plants--the informosomes--which made it possible to take a fresh look at the genetic structure of the plant cell.

The research of the young biologists Kh. I. Doshchanov, B. K. Iskakov and N. G. Filimonov has become widely known. They were awarded the Leninist Komsomol Prize.

Supervisors of basic scientific directions at the new institute are such well-known scientists as Kazakh SSR Academy of Sciences Academician T. B. Darkanbayev and Kazakh SSR Academy of Sciences Corresponding Member L. K. Klyshev.

We now have a good scientist collective. Most of them received scientific training in the nation's central scientific research institutes; their work is known by biologists in our nation and abroad.

[Question] Molecular biology is a science requiring supermodern equipment, the latest apparatus and devices. Does the new institute have this?

[Answer] Our laboratories have been provided with all necessary equipment. This includes ultracentrifuges, liquid scintillation counters, automatic recording spectrophotometers, computers, automatic amino acid analyzers and devices for chromatic and electrophoretic analysis. Such unique and extremely precise apparatus also require special service, and we have highly-qualified specialists in the field of computers, electronics, automation, refrigerator technology and organic synthesis.

[Question] Tell us, please, about the basic scientific directions of the new institute.

[Answer] Three basic directions of scientific activity have been defined. These are investigations of the molecular mechanics of protein biosynthesis and its regulation in the plant organism, development of the biochemical bases for improving the quality of the grain of cereal crops and finally the synthesis and metabolism of physiologically-active substances and enzymes of plant origin.

As apparent from this list, the institute has been called upon to promote the fulfillment of measures outlined in recent party and government resolutions for the acceleration of the development of physicochemical biology and biotechnology and the use of their achievements in the national economy.

Following the program of the USSR State Committee on Science and Technology we have begun enzymologic investigations to develop the theoretical bases for controlling the productivity and grain quality of wheat and rice and we will seek the biotechnology for obtaining new enzyme preparations for the food industry. This has already appeared in the Food Program.

We are conducting a series of investigations on the regulation of expression of plant genes during seed development and germination in cooperation with the academies of science of East Germany, Poland and Czechoslovakia.

Our plans are big, and all foundations exist for making the Institute of Plant Molecular Biology and Biochemistry an important scientific center in the near future.

Incidently, in exactly one year our institute will hold in Alma-Ata an international symposium "Prospects in Bioorganic Chemistry and Molecular Biology". Its participants will be important world scientists--members of the Federation of European Biochemical Societies.

9942
CSO: 1840/425

CATION-ANION SELECTIVITY AND CONDUCTIVITY OF CHANNELS FORMED BY BLACK WIDOW SPIDER VENOM IN LIPID BILAYER

Moscow BIOFIZIKA in Russian Vol 28, No 3, May-Jun 83
(manuscript received 24 May 82; after revision 21 Jun 82) pp 440-444

KRASIL'NIKOV, O. V., TERNOVSKIY, V. I. and TASHMUKHAMEDOV, B. A.,
Institute of Biochemistry, Uzbek Academy of Sciences, Tashkent

[Abstract] Solution of the complex problems which have arisen as a result of studies of the channel-forming capacity of protein toxins, problems concerning proteins and lipids in the definition of the selectivity of ion channels, require deeper analysis of the properties of channels formed by proteins in simple model systems. This work presents a further study of the channels formed in a lipid bilayer by black widow spider poison. It was found that whole black widow spider poison modifies the lipid bilayer over a broad range of pH values (3 to 8), the modifying capacity being minimal at 5.0, possibly as a result of the precipitation of protein which occurs at that pH. The channels were found to have high cation selectivity in neutral and slightly alkaline media. It is presumed that the lipid domain formation which occurs upon interaction of membrane-active polypeptides with the lipid bilayer is a necessary but insufficient condition for the formation of an ion-conducting structure. The ion channel is the contact area of two or more lipid domains which collide as a result of lateral diffusion. The increase in cation-anion selectivity of channels with increasing amplitude results from the participation of increasing numbers of toxin molecules in the formation of the ion channel. Figures 5; references 9: 7 Russian, 2 Western.
[489-6508]

UDC 612.822.1

ROLE OF Ca^{2+} AND Cl^- IN GABA AND PICROTOXIN EFFECTS ON K^+ EVOKED RELEASE OF ^{3}H-EPINEPHRINE FROM RAT BRAIN MESODIENCEPHALIC SYNAPTOSOMES

Yerevan NEYROKHIMIYA in Russian Vol 2, No 1, Jan-Mar 83
(manuscript received 16 Nov 81) pp 18-25

ARMENYAN, A. R., CHIFLIKYAN, M. D. and BUNYATYAN, G. Kh. (Deceased),
Institute of Biochemistry, Armenian SSR Academy of Sciences, Yerevan

[Abstract] Investigations were conducted on the involvement of Ca^{2+} and Cl^- on the effects of GABA and picrotoxin on K^+ evoked release of ^{3}H-epinephrine (HE) from the mesodiencephalic synaptosomes of the rat brain. Picrotoxin alone (10^{-5} to 10^{-3}M) inhibited K^+-evoked release of HE but did not counteract the inhibitory effects of GABA in this system. Picrotoxin did not affect spontaneous release of HE while GABA stimulated it (presumably due to the release of intracellular Ca^{2+}). In a calcium-free medium GABA enhanced spontaneous release of HE while picrotoxin was without effect and did interfere with the action of GABA. In a chloride-free medium K^+ (40 mM) stimulated HE release; GABA potentiated this process. However, picrotoxin inhibited evoked HE release and GABA failed to potentiate it in the presence of picrotoxin. In calcium and chloride free medium, HE release was attenuated and GABA exerted an inhibitory effect which was further enhanced by the presence of picrotoxin. It appears that picrotoxin does not block the presynaptic inhibitory effect of GABA on the release of HE from noradrenergic nerve endings of the mesodiencephalon. In addition to their effects on Cl^- transport, GABA and picrotoxin have variable effects on the ionic permeability of other ions. Figures 4; references 20: 3 Russian, 17 Western.
[344-12172]

UDC 615.214

SUCCESS AND PERSPECTIVES IN THE CHEMISTRY AND PHARMACOLOGY OF PSYCHOTROPIC AGENTS

Kiev VISNYK AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 11, Nov 82
pp 43-51

BOGATSKIY, A. V., academician, and ANDRONATI, S. A., corresponding member,
Ukrainian SSR Academy of Sciences

[Abstract] A review is presented of the recent developments and advances in the chemistry and pharmacology of psychotropic agents. In the USSR such agents are being actively developed and studied largely under the auspices of the USSR Academy of Sciences in collaboration with the academies of the union republics, especially the Ukrainian SSR Academy of Sciences, and the USSR Academy of Medical Sciences and other establishments

and institutions. Consideration is given to the design of active preparations, the endogenous opiates (endorphins), receptor biology, and the metabolic consequences of such agents and their relationship to psychic activity. In conclusion, container preparations are discussed as perhaps the most significant recent advancement in the delivery of such drugs to desired areas in the CNS. Figures 1; references 23: 2 Ukrainian, 13 Russian, 7 Western. [209-12172]

UDC 615.214.038.036.8(947.2)

CLINICAL TRIALS WITH NEW BULGARIAN PSYCHOTROPIC AGENTS

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA
in Russian Vol 82, No 11, Nov 82 (manuscript received 18 Jan 82)
pp 115-122

GULYAMOV, M. G., Chair of Psychiatry, Tajik Medical Institute imeni Avicenna, Dushanbe

[Abstract] Clinical trials were conducted with three new psychotropic agents released by the Bulgarian establishment Farmkhim. Testing of the antidepressive Adepren on a variety of patients showed that it was most effective in cases with lingering somatogenic astheno-depressive states and in subjects with periodic schizophrenia in depressive-paranoid episodes. Adepren was less effective in patients with depression traced to fear. Didepyl, an antiepileptic, was effective in controlling seizures in 70% of the cases in which it was applied (32 patients), particularly in cases with a duration of two years or less. The improvement in the patients was reflected on EEG recordings which, in certain cases, showed complete normalization. Tempalgin, a patented combination of a tranquilizer (Tempidone) and an analgesic (Analgin), was found particularly effective in rather moderate cases of alcohol abstinence syndrome, and showed some effectiveness in more severe cases only in combination with other agents.
[351-12172]

SUCCESSES AND PROBLEMS OF FELDSHER-MIDWIFE POINTS IN MOGILEV OBLAST

Minsk SEL'SKAYA GAZETA in Russian 1 Jun 83 p 4

[Article by I. Grib, chairman of the Mogilev Oblast Commission for the Inspection of Feldsher-Midwife Points: "The Feldsher-Midwife Point, Its Concerns and Problems"]

[Text] The first line in rural health care is the feldsher-midwife points. Their workers are deeply involved with the village inhabitants and are ready at any time of the day and night to render the people medical care and to carry out important work for disease prophylaxis.

In order to raise the quality of the medical service of the rural population, in Mogilev Oblast a public inspection of therapeutic prophylactic institutions is conducted annually.

Among the feldsher-midwife points--and there are 440 of them in the oblast--the Kostinskiy feldsher-midwife point of Mogilevskiy and the Biordovskiy feldsher-midwife point of Klichevskiy rayons once again serve as an example. The collectives of these institutions were recently awarded diplomas of the BSSR Ministry of Health and the BRK [not identified] of the medical workers professional union.

Both of these feldsher-midwife points are accomodated in well-constructed buildings, and there is much greenery on their property in the spring and summer. The points are supplied with the necessary medical equipment and instrumentation. They have their own pharmacies, collections of physical-therapy apparatus and refrigerators for storing bacteriological preparations.

The feldshers V. T. Demidenkova and Z. P. Lazarenko, who enjoy a well-earned respect among the residents, have worked at the feldsher-midwife points for more than 25 years. They are both shock-workers of communist labor and have been awarded "Exemplary Health-Care Worker" badges and, repeatedly, "Victor of Socialist Competition" decorations. Vera Timofeyevna and Zora Petrovna continuously raise their ideological-political and professional level, actively participate in public life and have for many years been elected deputies of the village soviets.

Many examples can be cited of how the feldshers render timely, qualified, medical care to the village inhabitants at any time of day. However, they

devote a large part of their work time to disease prophylaxis. Milkmaids, machine operators and, also, workers dealing with poisonous chemicals regularly undergo medical examination. Dispensary patients are examined and, if necessary, sent out for treatment. Pregnant women are taken into account, and the newborns observed at home. Prophylactic vaccinations are done only at vaccination points and at established times. The level of the therapeutic-prophylactic work of the Kostinskiy and Biordovskiy feldsher-midwife points is indicated by the fact that for 20 years the regions served by them have had no child mortality, and infectious morbidity and occupational traumatism have declined markedly. Therefore, both of the points have been approved by the rayon and oblast schools of advanced experience.

It should be noted that Vera Timofeyevna Demidenkova and Zora Petrovna Lazarenko work in close contact with the executive committees of the village soviets, the party organizations and farm supervisors. On their initiative, the competition for high sanitary standards in life and at work was expanded in the villages. Urgent questions in the medical service of the population are submitted for discussion to the executive committees or the sessions of the village soviets of people's deputies.

Specially-trained sanitary activists gladly assist the feldshers in conducting house calls and propogandizing sanitary-hygienic knowledge among the population.

Considerable assistance is rendered the feldsher-midwife points by the Mogilevskiy Rayon Polyclinic and the Klichevskiy Rayon Hospital, whose physicians make scheduled visits to the feldsher-midwife points, where they receive patients, conduct a thorough examination of the children and monitor the sanitary condtion of commercial dairy farms and stores.

Also doing good work are the Zagoryanskiy fledsher-midwife point in Kruglyanskiy, the Lobanovskiy in Cherikovskiy, the Ulanovskiy in Shklovskiy, the Bortnikovskiy in Bobruyskiy, the Borovitskiy in Kirovskiy and the Gorodetskiy in Krasnopol'skiy rayons. Working in these institutions are the enthusiastic workers E. V. Matyushevskaya, S. P. Khursan, Ye. I. Prosolovich, G. I. Pozdnyakova, P. G. Antipenko, T. S. Artemenko, L. I. Bondarovich and N. V. Filimonova.

I would like to discuss several difficult questions that trouble the workers of the feldsher-midwife points.

The turnover of cadres in the village therapeutic prophylactic institutions is still great. For example, at the present time 7 of the 30 feldsher-midwife points in Kostyukovichskiy Rayon lack medical workers. There are four such feldsher-midwife points each in Slavgorodskiy, Mogilevskiy and Chausskiy rayons.

Most feldsher-midwife points are housed in quality structures with an adequate number of rooms. At the same time, some feldsher-midwife points

are in need of routine and others, capital repair. Clearly, when constructing new points apartments should also be planned for the medical workers. And the points should be placed at suitable sites and not near dusty roads and should be finished in such a way as to permit continuous maintenance in the appropriate sanitary-epidemiological regimen (oil paint, tile, etc.).

It is hard to imagine a modern therapeutic institution without a telephone line. But in our oblast at the start of the current year 23 feldsher-midwife points did not have telephones, including 8 in Mogilevskiy and 4 in Osipovichskiy rayons. It would be interesting to know what they think about this in the Oblast Communication Administration?

The rapidity and quality of service to village inhabitants in many ways depend upon the provision of the medical workers with transportation. This is all the more important in that the village is tending to age, while the demands for medical service increase with each year. True, some feldsher-midwife points are provided with bicycles, and all this is fine in the summer. It seems to us that it is, today, entirely possible to pose the question as to the procurement for these purposes of mopeds or motorcycles. Why do the kolkhozes or sovkhozes not help their medical workers in procuring transportation? Especially since this is consistent with the decisions of the May and November (1982) Plenums of the CPSU Central Committee and the resolution of the CPSU Central Committee and USSR Council of Ministers, adopted last year, "Additional Measures for Improving the Protection of the Health of the Population".

And, finally, many feldsher-midwife points need more effective assistance from their senior colleagues, the specialists of city and rayon medical institutions. Only a welcoming hand will be given by the workers of the feldsher-midwife points to the mobile, brigade types of provision of medical care to the village population.

9942
CSO: 1840/426

PENSION BONUS FOR CONTINUOUS TENURE AT THE SAME ENTERPRISE

Moscow VETERINARIYA in Russian No 5, May 83 p 79

[Beginning of article in "Legal" column: "Surcharge to Pensions for Continuous Work Tenure at the Same Enterprise"]

[Text] As of 1 January 1983, a 20% bonus has been added to pensions for continuous work at the same enterprise, institution or organization.

By ukaze, which is dated 7 January 1980, entitled "On Increasing the Surcharge on Old-Age Pensions for Continous Work at the Same Enterprise, Institution or Organization (VEDOMOSTI VERKHOVNOGO SOVETA SSSR, No 3, 1980, p 40), the Presidium of the Supreme Soviet of the USSR established an increase, from 10 to 20%, in the surcharge to the old-age pension of blue- and white-collar workers with at least 25 years tenure and for women (with children) at least 20 years tenure at the same enterprise, institution or organization if they also are entitled to a surcharge to their pensions due to their overall work tenure. Under such conditions, a surcharge of up to 10% of the pension is added over and above its established maximum value.

In view of the inquiries received about the procedure for calculating continuous work tenure at the same enterprise, institution or organization (referred to hereafter as "enterprise") that entitles one to a 20% surcharge to the pension, the USSR State Labor Committee and AUCCTU Secretariat issued an explanation of this procedure on 28 October 1982:

> in cases where subordination, name or structure of the enterprise change, work there both before and after such changes is considered as continuous work at the same enterprise;
>
> tenure of continuous work at the same enterprise is retained when a worker is transferred to another one, which is created (including cases of separation, mergers, attachment) on the basis of the enterprise (enterprises) where he was employed before the transfer; [end of article missing].

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10,657
CSO: 1840/494

ROLE OF RURAL OUTPATIENT CLINICS EXAMINED

Tallinn SOVETSKAYA ESTONIYA in Russian 19 Mar 83 p 2

[Article by A. Lipand, deputy chief of the Administration of Therapeutic and Prophylactic Care, EsSSR Ministry of Health: "The Rural Outpatient Clinic"]

[Text] In recent years, the republic health organizations have been paying particular attention to the development of medical care and public health for rural inhabitants. This task was also set down in the decree by the CPSU Central Committee and USSR Council of Ministers, "Additional Measures for Improving the Health of the Population." The Ministry of Health worked out special plans, with measures for the development of outpatient/polyclinic medical care. Putting them into operation allows a significant improvement in medical service.

The role of the rural outpatient clinics [ambulatoria] has grown significantly in the course of rural medical network reorganization. Whereas there were 54 of these clinics in the republic in 1976, there were already 76 in 1982, and a qualitatively new type of rural outpatient clinic has taken shape. An internist, a pediatrician and a stomatologist are working there now.

All clinical laboratory analyses are done in house; they have a physiotherapy office and other auxiliary services. A rural pharmacy operates there. Of course this outpatient clinic is also equipped with an ambulance service.

Model plans for these modern rural health facilities have been worked out in our republic. True, there are not many for now, but there will be in the future. A decision of the republic government concerning the construction of similar rural clinics has already been put into practice right now.

Toward the close of the current five-year plan, 20 such outpatient clinics are to be built in various rayons of the republic. The construction is going according to plan, taking into account economic, social and demographic factors.

Of course, accomplishing this through the efforts of the Ministry of Health of the republic alone is difficult. Therefore, the services of the

kolkhozes and sovkhozes of the republic have been enlisted. Thus, 14 clinics will be built during this five-year plan. Examples of this are the Audru Sovkhoz in Pyarnuskiy Rayon, the Lyumanda Sovkhoz in Kingiseppskii Rayon and Saad"yarve Kolkhoz in Yygevaskiy Rayon.

These are, so to speak, planned installations. However, several farm managers who were well aware of the usefulness and importance of creating their own kind of health facility quite nearby, went to the Ministry of Health of the republic themselves, with a proposal for building new outpatient clinics. For example, P. Basistyuk, chairman of Saverna Kolkhoz, Pylvaskiy Rayon, promised to open a modern outpatient clinic during this Five-Year Plan. And one might wish for more interested people such as this who take the initiative in this important undertaking.

Not only is it necessary to build new clinics, but to rebuild existing ones, and to search out different opportunities for improving medical service to the population. In recent years, the role of the rural uchastok hospitals has diminished somewhat. Such hospitals are located in cramped, unsuitable areas with a small number of beds; they are not meeting the needs of the day. In the rayons where modern central hospitals have been built, they have changed the specialization of these small medical institutions, turning them into outpatient clinics and feldsher-midwife points, and, in isolated cases, into specialized departments of the central hospitals. This has extended the realm of outpatient care even more.

In order to make specialized therapeutic care available to rural inhabitants, two specialists are working at the present time in many polyclinics of central rayon hospitals: a neuropathologist and an oculist. By the end of the five-year plan, there will also be two of these specialists in every rayon hospital.

There has also been a significant shift in the distribution of young physicians. In 1982, 92 physicians were sent to work in rural rayons--this is almost half of all medical students graduating from Tartu State University.

Today the quality of first aid and emergency care has improved significantly in rural areas. All emergency ambulances are radio-equipped. In addition, there is a special cardiology team in Khar'yuskiy Rayon. Procurement of modern apparatus and equipment has also improved. For example, there is artificial respiration equipment and also an entire range of other reliable equipment on hand at all rayon hospitals for rendering emergency care. A network for psychonarcological [sic] aid is being developed. Now, there are physician/psychiatrists working in each rayon of the republic, which was certainly not the case before.

Mention should be made of the privileges provided at the present time for rural workers who need medical care. This means that milkers and livestock breeders are served in medical institutions without having to wait in line.

There are also privileges for key medical personnel working in rural areas. The government foots part of the bill for their electrical and housing payments, and in addition the salary of a rural physician is higher than that of a city one.

Due to the gradual decrease in size of the therapeutic uchastoks, a transition has begun to a prophylactic dispensary system for the whole population, to an increase of the scope of outpatient clinic examinations and to improvement of management of prophylactic inspections.

In recent years we have had public examinations of rayon hospitals and rural outpatient clinics and feldsher-midwife points. Among the victors [in these examinations], Kuusalskaya Outpatient Clinic in Khar'yuskiy rayon is worthy of mention. All inhabitants are examined here on a regular basis. Each worker is examined and treated before beginning his work in the field. This outpatient clinic, along with Linnamyaeskiy feldsher-midwife point in Khaapsaluskiy rayon serves as a school of advanced experience for us here in the republic. This is an example of a well-regulated prophylactic dispensary and preventive operation and a high level of sophistication in service. The good work at Vyruskaya Central Hospital and Akh'yaskaya Uchastok Hospital, Pylvaskiy Rayon and the paramedic/obstetric center at Vastsemyyza in Vil'yandiskiy Rayon should also be mentioned.

There is in existence a system for improving rural physicians' qualifications without interrupting their productivity. They usually meet once a month on Saturday in the central rayon hospitals. Here, lectures are given and seminars held on a specially developed theme. An exchange of work know-how takes place, and special attention is given to professional ethics of physicians and knowing how to deal with patients. It must not be forgotten that a patient's attitude of trust toward his physician is one of the conditions necessary for effective treatment.

12262
CSO: 1840/429

HOSPITALS NEED ENGINEERS--A PHYSICIAN'S THOUGHTS ABOUT UPGRADING PUBLIC HEALTH

Moscow IZVESTIYA in Russian 10 Jun 83 p 2

[Article by Ye. Korolenko, chief physician of Oblast Clinical Hospital, Zaporozhye]

[Text] About 10 years ago, our hospital had medical equipment worth 380,000 rubles. Today, it has 4 times more. A report was given by the Medtekhnika Oblast Board: equipment furnished to medicine in this oblast over the same period of time increased in monetary cost from 8 to 20 million rubles.

Soon the radiology building for our hospital will start operating. Installation of its equipment, costing about a million rubles, is being completed. The department of radiation diagnostics is furnished with the most modern medical equipment--roentgenoangiography, ultrasound and thermographic apparatus, instruments for radioisotope and immunological studies. Where necessary, the data obtained will be processed by a computer. All this will result in significant reduction of time required to make a diagnosis; it will become possible to start treatment earlier and manage it with greater competence. Special data banks will be created, from which a physician can always retrieve exhaustive information about a patient's prior treatment.

Use of modern diagnostic methods and treatment has made it possible in recent times to reduce the average stay at our hospital per patient by 4 days. And the quality of treatment has improved. Not so long ago, we took an average of a week or 2 to prepare patients for routine surgery. Introduction of new diagnostic instruments has reduced this time to one-half. As a result, the number of people cared for by our clinical hospital increased by over 3000 last year, as compared to 1977, or by almost 20%. And this was done without increasing the number of beds. This achievement was largely attributable to the wide use of technology.

We physicians view improvement of technical equipment as an important reserve for intensification of clinic operation. This is one of the most pressing problems that confronts us. I. Mokerov, from Sverdlovsk, described in IZVESTIYA No 109 some important organizational reserves for improving the efficiency of hospital operation, while we should like to dwell on the medical technology and its use.

The alliance of medicine and technology is growing closer from year to year. At the present time, the roster of regular hospital staff is including, more

and more often, positions of engineers, skilled craftsmen in servicing and repairing all sorts of medical apparatus and instruments. The collaboration of technical workers and physicians is strengthening constantly. There are few at our hospital who do not know the brigade leader of Medtekhnika, Viktor Vasil'yevich Kolomoyets and his comrades. Viktor Vasil'yevich has quite a few projects to his credit, which he worked on together with physicians.

At the present time, the chief engineer service has become a habit at large medical institutions. In our hospital, just under 20 highly skilled specialists are at work in this important department, who are proficient in the area of inspection-measuring instruments and all sorts of installations.

In our opinion, it would be desirable to have a cybernetic laboratory of intensive care at large, 1000-bed clinical hospitals. For proper operation of such laboratories, four scientific associates and four engineers to service complicated equipment are needed.

Perhaps there is another idea that will appear interesting. Centers are being established in our country [or hospitals?] for servicing passenger cars. What if, by analogy, we were to establish interoblast centers for engineering services to hospitals? Such a zonal center could take on the job of taking care of medical equipment on a well-organized basis, rather than haphazardly as is often the case today.

For the time being, we physicians see that there is a perceptible rift between manufacture of equipment that "works" for man's health and training of specialists to service various instruments. There are several specialized secondary educational institutions that train technicians for installation and repair of medical and x-ray equipment. However, there is an acute shortage of such specialists. This is why our Medtekhnika board does not have service contracts with all hospitals by far that have x-ray units, not to mention more complicated equipment.

We know that the specialists at the Moscow Higher Technical School imeni Bauman and First Moscow Medical Institute have begun to train medical engineers. But even if we finally get such specialists, it is unlikely that the nation's needs will soon be met. Thus far, such jobs are held by enthusiasts, those who mastered the bioengineering profession on their own initiative.

Literate people must operate the complicated medical equipment of today and the future. Evidently, we cannot rely on self-trained people alone. It is also necessary for physicians to know more about the equipment that is in service for them.

We should also mention the unjustified diversity of models of instruments, which make it difficult to service and repair them. We have too many modifications of even the simplest thermostats and drying chambers, not to mention measuring equipment and physiotherapy apparatus (which, incidentally, are also not very complicated). But while there is a surplus of spare parts for some of these instruments, it is impossible to find a single one for others. The process of unification [standardization] of production is being overlooked thus far by enterprises under the Ministry of the Medical Industry. This also applies to those who are charged with production of all sorts of equipment.

There are so many valuable instruments and units that do not provide perceptible benefit only because the most elementary spare parts for them are missing! The RO-6 anesthesia and breathing apparatus costs 5500 rubles. The rubber diaphragms for it are referable, it can be freely stated, to items that are worth pennies. But, alas, it is expressly because of their absence that the unit stands idle for months. Or the cardiographs. They are produced in our country in at least 6-8 versions, although physicians would be quite satisfied with three. But the problem is that it is not such a simple matter to obtain pens for their recorders or paper. This means that the cardiograph is not used. We also receive too few spare parts for microscopes. Yu. Uryupov goes to great pains to see that the precision instruments work well! But what will happen if he retires tomorrow?

It happens that complicated equipment stands idle because there is no wire.... Last year, of the 3 tons of covered wire allocated by our oblast to repair medical equipment, just over 30 kg was delivered last year. For this reason, about 40 expensive instruments are standing idle.

There has been an increase in instances where microcircuits and transistors of one configuration are used to produce complicated electronic apparatus by the producing plants, but by the time they have served their term, another modification is delivered as replacement. Not infrequently, this means that one offers "shoe" leather to repair chrome boot tops.

We feel that the organizational structure of the Medtekhnika service has not been thought out well. In all of the republics and on a national scale, its departments are subordinated to public health ministries. Yet the enterprises that produce the equipment are under the jurisdiction of the Ministry of the Medical Industry.

As we see it, technology should have one boss. Then the production of diverse equipment and its repair will be concentrated in the same hands. Ultimately, the patient will benefit from this.

10,657
CSO: 1840/492

PROBLEMS WITH WORKERS' RESORTS IN TURKMENIA

Ashkhabad TURKMENSKAYA ISKRA in Russian 30 Mar 83 p 2

[Article "In the Standing Commissions of the Turkmen SSR Supreme Soviet"]

[Text] A session of the Standing Commission on Health and Social Welfare, the Turkmen SSR Supreme Soviet, was held on 28 March in Ashkhabad. A report was made by the commission's chairman, E. Ovlyakuliyev: "The Work of Sanatoriums-Prophylactoriums in Protecting and Strengthening the Health of the Republic's Workers".

The speaker, the reporting deputies and the invited responsible workers of ministries and departments noted that during the past years in the republic definite work has been done to expand the network of these institutions and to improve the content of their work. Twelve prophylactoriums, in which more than 7,000 workers and employees stayed in 1982, are presently active in the republic. The construction of sanatoriums-prophylactoriums has reeently been developed at 100 sites with good material-technical and therapeutic facilities.

At the same time, the sanatoriums-prophylactoriums active in the republic do not meet all the workers' increasing requirements for prophylactic therapy. Most of them have poor material-technical facilities. The plans for developing the network of these institutions are not being systematically fulfilled. The Ministry of Construction has been building its sanatorium-prophylactorium in Ashkhabad since 1977; the TuSSR Ministry of Agriculture and Rural Construction, since 1976 for agricultural workers in Chardzhou, Mary and Tashauz oblasts. Many ministries and departments do not have their own sanatoriums-prophylactoriums.

Because of the absence of requisite control of the work of sanatoriums-prophylactoriums on the part of oblast soviets and industrial branch committees, of the unions, the plan for improving workers' health by reducing the number of shifts is not being fulfilled.

In spite of the large available potential, the TuSSR Ministry of Light Industry did not take timely measures to improve the conditions and content of the work of prophylactorium of Maryyskaya Primary Wool Processing Factory imeni Poltoratskiy.

The rich material and therapeutic facilities of the Karakum Sanatorium-Prophylactorium of the Karakumgidrostroy Trust in Mary Oblast are poorly utilized for organizing a productive workers' therapy and rest.

The TuSSR Ministry of Health and its organs in the provinces are not fully implementing the Law of the Turkmen SSR on health in the sphere of rendering concrete assistance to the sanatoriums-prophylactoriums.

The republic still does not practice health amelioration in sanatoriums-prophylactoriums for women workers, i.e., mothers with children, and, in the summer time, school children.

The ministries and departments, the executive committees of the local soviets of peoples' deputies, the professional-union republic committees and oblast councils and enterprise supervisors take insufficient interest in the content of the work of sanatoriums-prophylactoriums. Questions of the construction of new and the repair of existing sanatoriums-prophylactoriums are poorly resolved.

A detailed resolution was adopted on the question discussed.

9942
CSO: 1840/423

UDC 612.8--053.2

BASIC TRENDS OF STUDIES OF THE PHYSIOLOGY OF CHILD DEVELOPMENT: RESULTS AND PROSPECTS

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 9, No 1, Jan-Feb 83
(manuscript received 30 Nov 81) pp 3-17

KHRIPKOVA, A. G. and FARBER, D. A., Scientific Research Institute of Physiology of Children and Adolescents, USSR Academy of Pedagogical Sciences, Moscow

[Abstract] A review of the literature showed the great importance of specific understanding of the periods of development, determination of age-related boundaries of change from one stage to another and complex studies of the physiological systems based on a systematic approach to the development of functions in ontogenesis. Theoretical preconditions of the study of child psychology were examined with consideration of adaptational possibilities of the body in different age periods. Complex physiological studies of 3-12 year old children were described. These studies revealed year-by-year characteristics of functioning of the organism in students in this age range and showed some general regularities of formation of the physiological system in ontogenesis. The basic ontogenetic development which provides increasing adaptational potential to the organism, as complexity of surroundings increase, was found to be the improvement of morphological organization of physiological systems as a result of increased integration of the flexible plastic links developing in ontogenesis and being selectively switched on in response to specific situations. These data can be used to determine the functional potentials of the child's body in planning school programs. Figures 4; references 24 (Russian).
[476-2791]

UDC 612.6+612.13+612.824.8

REACTIONS OF BASIC PHYSIOLOGICAL SYSTEMS OF THE ORGANISM OF CHILDREN (6-12 YEARS OF AGE) IN THE PROCESS OF ADAPTING TO SCHOOL ACTIVITIES

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 9, No 1, Jan-Feb 83 (manuscript received 30 Nov 81) pp 18-24

ANTROPOVA, M. V., Scientific Research Institute of the Physiology of Children and Adolescents, USSR Academy of Pedagogical Sciences, Moscow

[Abstract] A study of the functional state of the basic physiological systems of 6-12 year old children in the process of adapting to school activities showed a regular connection of adaptation with many exogeneous and endogeneous factors. Establishment of the physiological systems at a new level of regulation during adaptation to school activity was faster and produced less stress on basic physiological systems if age-related anatomical-physiological features of the children were considered and adequate motor activity were included in the program. The study revealed three stages of the adaptation process, their duration and connection with the age of the children, the readiness of the organism, according to morpho-functional indicators, for systematic school work, with neuroendocrinal reconstructions caused by sexual maturation, with the volume of motor activity in the course of the day and the week and the length of the lesson. Strict monitoring of school work, rational organization of activities, provision of proper sanitary facilities and pleasing arrangement of the school premises ensures the reduction of stress on the children. Indicators of long-term adaptation of children to school work are listed. Figures 4; references 64: 61 Russian, 3 Western.
[476-2791]

UDC 362.15+362.7

SOCIAL-HYGIENIC RISK FACTORS AND THEIR EFFECT ON THE HEALTH OF CHILDREN

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, Feb 83 (manuscript received 11 Jan 82) pp 13-17

FROLOVA, O. G., NIKOLAYEVA, Ye. I., SKOSYREVA, A. M., SHEVELEVA, G. A. and PROKHOROVA, L. M., All-Union Scientific Research For Health Protection For Mothers and Children

[Abstract] A method for classifying pregnant women as being at high, medium or low risk of experiencing disturbances of pregnancy was described and discussed and the relationship of these risk factors to various conditions and pathologies of pregnancy and in the post-natal period was shown. Prenatal deaths were 20 times higher in high-risk women and 3 1/2 times higher in average-risk women than in low-risk gravidae. Consultation procedures used in the care of gravidae were discussed. A specially-developed

gravidogram is used in observation and examination of high-risk women. The role of social-hygienic risk factors was discussed in some detail with great emphasis being placed on the hazards of alcohol consumption by the mother and father and cigarette smoking by the mother on the health of the fetus, neonate and mother.
[475-2791]

UDC 616-057:055.25:313.13

PECULIARITIES OF MORBIDITY WITH TEMPORARY LOSS OF FITNESS FOR WORK AMONG FEMALE INDUSTRIAL WORKERS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, Feb 83 (manuscript received 9 Sep 82) pp 24-26

OSHCHEPKOV, V. I., Candidate of Medical Sciences, Department of General Hygiene (Director V. I. Oshchepkov), Izhevsk Medical Institute

[Abstract] Peculiarities of morbidity with temporary loss of fitness for work in female machine shop employees were studied and the role of heavy labor, tensions and personal stresses in the development of loss of fitness for work were considered by comparing work time lost by 1676 female machine shop workers with figures for women working in design engineering and technicql work. Members of both groups had at least four years of experience in their work. Morbidity with temporary loss of fitness for work was higher in the machine shop workers than in the fitters and members of the control group. It was found that tension from the work had a greater effect on the morbidity level than did heaviness of the work. Analysis of the effect of different factors on morbidity level showed job-related tension was the leading cause while stress of daily life was second and the worker's age and work-load was third. The heaviness of the work affected only morbidity related to skeletal-muscular diseases and connective tissue diseases.
[475-2791]

UDC 377.5:61(103)

OPTIMIZATION OF THE TEACHING PROCESS IN SECONDARY MEDICAL SCHOOLS IN COUNTRIES OF SOCIALIST COLLABORATION

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 2, Feb 83 (manuscript received 16 Mar 82) pp 30-32

MUCHINSKAYA, S. P., POLUKHINA, N. A. and SKOVERDYAK, L. A., All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N. A. Semashko, USSR Ministry of Health

[Abstract] Paramedical students, coming from 10-year schools and 8-year schools, follow a school plan emphasizing mastery of theoretical material and acquisition of practical skills with consideration of the age and previous training of the students. The lecture method is emphasized but group studies, discussions, seminars and practical exercises are being used more extensively. Technical equipment is used to reinforce theoretical training. Practical training includes three basic forms: practical exercises at the school in the middle of the school year, territorial practice in a medical institution in the middle of the school year and summer territorial practice in hospitals. All three forms involve group exercises under supervision of a teacher specialist. Practical studies at the schools are reinforced by programmed learning procedures, and skills are consolidated in work at hospitals and polyclinics. Differences in the teaching plan, in the various countries (which include Poland, Romania, Hungary, Bulgaria, Mongolia and the USSR), are discussed.
[475-2791]

PROBLEMS OF THE MOSCOW EMERGENCY AMBULANCE SERVICE

Moscow LITERATURNAYA GAZETA in Russian 16 Mar 83 p 15

[Article entitled "03" and the Rest of Us by N. Kaverin, Chief Physician of the Emergency Ambulance Service]

[Abstract] The organizational and operational procedures of the Moscow emergency squad (Skoraya Pomoshch) are described, problems and frustration faced in serving the public discussed and illustrated by describing actual incidents and suggestions for improvement of the service are presented. More than 30 percent of the calls for emergency medical aid by the Moscow ambulance service are unnecessary or inappropriate. The load is increased by the inability of citizens to obtain other medical assistance, by calls for help when emergency care is not required. Complaints from persons requesting the service without cause must be investigated. It is suggested that a charge for emergency ambulance service could improve the service. Problems involving selection of competent personnel for the service are discussed.
[509-2791]

POLYCLINIC WITHOUT LINES

Moscow IZVESTIYA in Russian 30 Mar 83 p 2

TSIKORA, S., IZVESTIYA correspondent, Zaporozh'ye-Kiev

[Abstract] An automated medical diagnostic center has been developed at the Zaporozh'ye Automobile Plant and is being used there. The procedure involves a computer review of the patient's medical history with elimination of the possibility of some pathological states and therefore the elimination of the need for further questioning in these areas, the study of the computer-provided data by the physician and his observation of the patient, diagnosis and printout of the basic medical indicators showing what is normal and abnormal for each patient. The procedure requires the assistance of 11 physicians but has saved 30,000 man-days of production in its five months of operation. It also provides clear signs of predispositions to pathological states or diseases. Centers of this kind are now being planned or set up at many Soviet enterprises but they will be most effective at major enterprises.
[506-2791]

UDC 613.84-058+613.84:614.1

TOBACCO SMOKING AND SOME SOCIAL-DEMOGRAPHIC CHARACTERISTICS (DATA OF A COOPERATIVE STUDY IN MOSCOW AND KAUNAS)

Moscow TERAPEVTICHESKIY ARKHIV in Russian No 1, Jan 83
(manuscript received 6 May 82) pp 57-61

OLEYNIKOV, S. P., CHAZOVA, L. V., GLAZUNOV, N. S., DEYEV, A. D., BAUBINENE, A. V., PROKHORORSKAS, R. P. and DOMARKENE, S. B., All-Union Cardiological Scientific Center, USSR Academy of Medical Sciences (General Director, academician Ye. I. Chazov), Kaunas Medical Institute (rector, academician Z. I. Yanushkevichus), LiSSR Ministry of Health

[Abstract] A cooperative study of the relationship between smoking and age, level of education and occupation included analysis of questionnaires received from a random sample survey of men ranging in age from 40 to 59 years, in Moscow (3983 queries with 66 percent responding) and in Kaunas (5482 queries with 69.2 percent responding. There was a statistically reliable decrease of the number of smokers with aging in both cities. The leading cause of the decrease of the number of smokers with aging was deterioration of the state of health. Fewer smokers were found among men with higher education in comparison with men with secondary and elementary education. The largest percentage of smokers, in both cities, was found in workers, the second largest percentage was found in technical workers and service employees while the lowest percentage was found in intellectuals. References 22: 10 Russian, 12 Western.
[434-2791]

UDC: 616.89-008.441.13-008.6-936.1

RELATIONSHIP OF BASIC CHRONIC ALCOHOLISM SYNDROMES

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA in Russian Vol 83, No 4, Apr 83 (manuscript received 18 Sep 82) pp 596-600

AL'TSHULER, V. B., All-Union Scientific Research Institute of General and Forensic Psychiatry imeni V. P. Serbskiy, (Professor G. V. Morozov, director academician, USSR Academy of Medical Sciences, Moscow)

[Abstract] A history of the attitudes of researchers toward alcoholism as a disease, as manifested in published works, is presented. The authors examined 349 chronic alcoholics who retained their pathologic attraction to alcohol in spite of energetic therapy. Two hundred thirty three of the patients were undergoing treatment for alcoholism for at least the second time. The authors distinguished emotional-will and intellectual-mnestic signs of alcoholic mental degradation. The emotional disorders were found to be more widely varied and much more frequently seen than the intellectual disorders. A clinical example is presented of the case history of an alcoholic. The case history shows strong and generalized attraction to alcohol with frequent and severe bouts of drunkenness, absence of persistent remission, noncritical attitude toward alcohol abuse, a tendency to justify the abuse with objective causes. Morbid attraction to alcohol is considered the earliest and most persistent symptom of chronic alcoholism, one sufficient for diagnosis, defining the course and prognosis of the disease and forming the other two main alcoholism syndromes, abstinence and mental degradation. References 10: 8 Russian, 2 Western.
[427-6508]

UDC: 616.1/.2-035.7

DIAGNOSTIC ERROR ANALYSIS METHOD

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 5, May 83 (manuscript received 13 Jul 82) pp 20-22

PETROV, M. N., candidate of medical sciences, Hospital No 31, Leningrad

[Abstract] An analysis of diagnostic errors has been made on the basis of 14,134 patients discharged from hospitals plus 5697 patients who died and were autopsied. Correlation tables were composed to indicate hyperdiagnosis and hypodiagnosis of various conditions. An overall diagnostic error criterion is calculated including both hyperdiagnosis (diagnoses not confirmed upon later examination or autopsy) and hypodiagnosis (diagnoses made upon later hospital examination or autopsy which had not been made upon initial examination). The difficulty of differential diagnosis of heat attach and stenocardia is responsible for almost half the misdiagnoses in such cases. Chronic bronchitis and acute pneumonia were found to be most

difficult for prehospital diagnosis, followed by ulcers and gastritis, glomerulonephritis and pyelonephritis, croupous and focal pneumonia, stenocardia and osteochondrosis. It was found to be difficult to differentiate tumors from pneumonia, various manifestations of atherosclerosis, leukemia, tuberculosis and chronic ulcer even in the hospital. References 8 (Russian). [418-6508]

UDC 362.121:616-036.865

TRAINING PROCEDURES AND EVALUATION OF EXPERTISE WORK OF POLYCLINIC PHYSICIANS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, Jan 83 (manuscript received 26 Apr 82) pp 14-18

PERESKOK, A. A., Belgorod Municipal Hospital No 2

[Abstract] A program for training physicians to make expert decisions concerning cases involving fitness for work was developed at Belgorod Municipal Hospital No 2 in 1975 and has been used to improve qualifications of physicians in this work, to check their performance and to identify and eliminate shortcomings in the procedure. Evaluations are based upon a table containing 13 criteria of performance in deciding questions of temporary disability. The form is completed for each physician involved every quarter, by the deputy chief physician, and the results are discussed at medical conferences, used to improve performance and to help in assessing socialist competition. There has been a systematic reduction of overall morbidity and temporary labor disability at some leading enterprises served by the hospital using this system.
[431-2791]

UDC 616-082:658.387

MEANS OF IMPROVING THE ORGANIZATION OF WORK OF ADMISSIONS DEPARTMENTS OF MULTI-PROFILE HOSPITALS

Moscow ZDRAVOOKHRANIYE ROSSIYSKOY FEDERATSII in Russian No 1, Jan 83 (manuscript received 15 Mar 83) pp 18-21

MINAKOV, V. F. and RADCHENKO, A. P., All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N. A. Semashko, USSR Ministry of Health, Moscow

[Abstract] A study of the operation of the department of admissions of 18 hospitals in Moscow, Leningrad, Kiev and Dnepropetrovsk was based on data from case histories, time-studies and observations. Some deficiencies in operation were noted and discussed briefly and measures to be used to improve operations were presented.
[431-2791]

UDC 616-053.2-058+313.13-053.2-058](470.11-21/.22)

EFFECT OF A COMPLEX OF FACTORS ON MORBIDITY OF YOUNG CHILDREN LIVING IN AN URBAN OR RURAL LOCALE OF NOVGOROD OBLAST

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No Jan 83 (manuscript received 29 Jul 81) pp 28-31

STUKOLKIN, O. N., VESELOV, N. G. and YUR'YEV, V. V., Novgorod Oblast Department of Public Health; Leningrad Pediatric Medical Institute

[Abstract] Morbidity in the first three years of life and the effect of social-biological, social-hygienic and medical measures on it were studied in 3186 children living in Novgorod, other cities of Novgorod Oblast and its rural rayons. A table lists the influence of various factors on children's health in these separate locales. An increase of morbidity in the second year of life and a decrease in the third year were seen. The morbidity rate in Novgorod itself and that in the rural area were about the same in the first year of life but it increased in Novgorod, peaking in the third year, while it decreased progressively in the rural area. Social-biological factors had the greatest effect on morbidity in the first six months of life, while, in the second year and throughout the third year, pre-school attendance was the most important factor. Results of the study were used to introduce specific measures to reduce morbidity in children under the age of three years in the regions studied.
[431-2791]

UDC 614.2(470.341-22):658.386.3

GORKI MEDICAL INSTITUTE PROGRAM FOR ADVANCED TRAINING OF RURAL PUBLIC HEALTH ORGANIZERS

Moscow ZDRAVOOKHRANENTYE ROSSIYSKOY FEDERATSII in Russian No 1 Jan 83 (manuscript received 15 Mar 82) pp 36-39

STEPANOV, A. D., professor and IKSANOV, M. I., Department of Social Hygiene and Public Health Organization, Gorki Medical Institute imeni S. M. Kirov

[Abstract] A program for advanced training of chief physicians of central rayon hospitals and their deputies, developed and presented by Gorki Medical Institute, is described and discussed. The program is based on a plan developed at the Central Order of Lenin Scientific Research Institute of Advanced Training of Physicians. Staff organization and duties are described and problems encountered in ensuring efficient use of staff are discussed.
[431-2791]

UDC 362.76+371.71+613.955

COLLABORATION IN HEALTH PROTECTION OF SCHOOL CHILDREN

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, Jan 83 (manuscript received 13 Apr 82) pp 39-41

USANOVA, Ye. P., candidate of medical sciences, MATVEYEVA, N. A., candidate of medical sciences, NOVOSELOVA, V. S. and ULITINA, V. P., Gorki Scientific Research Pediatric Institute, RSFSR Ministry of Health; Gorki Medical Institute imeni S. M. Kirov; Gorki Municipal Department of Public Health

[Abstract] A scientific brigade including personnel from Gorki Scientific Re earch Pediatric Institute, Gorki Medical Institute imeni S. M. Kirov and municipal health department specialists conducted a thorough study of the state of health of 3500 school children ranging in age from 7-17 years. The state of health of upper class (15-16 year-old) students was worse than that of younger (7-8 year-old) students. This trend toward deterioration of health was noted as early as the age of 9 or 10 years and increased considerably as the children reached the middle and upper school ages. The trend was more pronounced in girls than it was in boys. The biological age and somatic body type were determined from morphological criteria. The data obtained were used to formulate recommendations to medical institutions concerning health care for school children. Measures adopted as the result of the study have reduced chronic tonsillitis, scoliosis, rheumatism and chronic pneumonia morbidity in the target group.
[431-2791]

UDC 378.661:362.1([47+75]-17)

TRAINING PHYSICIANS FOR WORK IN THE FAR NORTH

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, Jan 83 (manuscript received 30 Jun 82) pp 41-44

BYCHIKHIN, N. P., Professor, ARISTOVA, V. V., KALASHNIKOV, R. N. and OBRAZTSOV, Yu. L., Candidate of Medical Sciences (Arkhangel'sk)

[Abstract] The Arkhangel'sk Medical Institute program for training medical personnel to work under the unique conditions of the Far North is described and discussed. The program provides special consideration of diseases and conditions related to the geography and climate of the Far North, the industrial activities of that region, maritime activities centered around Arkhangel'sk and the special conditions of the waters of the Far North and of the tundra and taiga. Methods of conditioning physicians and training them to protect their personal health under these conditions are described.

The training program also includes instructions concerning the economic conditions of the Far North as well as moral, ideological and political training. The importance of the training program is seen from the fact that 71 percent of Arkhangel'sk Medical Institute graduates work for 10-30 years in the European Far North.
[431-2791]

PSYCHIATRY

UDC: 616.89-07:313.13

PROBLEM OF RECOGNITION OF MENTAL PATIENTS AND TOLERANCE OF THEM BY THE POPULATION

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA in Russian Vol 83, No 4, Apr 83 (manuscript received 19 Nov 81) pp 577-584

LIBERMAN, M. N., Department of Epidemiology, (Department Chief L. M. Shmaonova) Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow

[Abstract] The purpose of this work was to determine and study factors which prevent certain patients or their relatives from seeking psychiatric assistance. The report is based on materials from examination of a random sample of the population of Frunze, which revealed 186 persons with mental disorders, but not under psychiatric care. Additional work on recognition of patients by consultation with physicians and neuropathologists increased the total group to 209 patients. All patients were examined using a special form including both clinical and social characteristics. It was found that 33.9% of the patients not under psychiatric care had neuroses, 30.2% had cerebrovascular disease with mental disorders, 11.5% had traumatic mental disorders, 3.3% had organic brain damage, 2.9% had schizophrenia, 2.4% had senile dementia, 1.4% had oligophrenia, 1.0% had psychopathy, 1.0% had epilepsy and 10.0% had other forms of psychopathology. Analysis of the results of the study showed that the tolerance of the population for the mentally ill, in spite of their purely social nature, is based on clinical, social and cultural factors. There is a dual nature to this tolerance, a product on the one hand of a certain level of social adaptation of the patient and on the other hand indicating the inability of some of the population to adequately recognize manifestations of mental disease. Some patients and their relatives, however, consciously avoided psychiatric care, being afraid of possible social limitations. The tolerance of the general population for persons with mental disease is considered to be a major factor in the failure of many mentally ill persons to seek and obtain psychiatric assistance. References 13: 12 Russian, 1 Western. [427-6508]

PSYCHOLOGY

IMPORTANCE OF PSYCHOLOGY IN MAINTAINING OPTIMUM PRODUCTIVITY CITED

Moscow PRAVDA in Russian 29 May 83 p 2

[Article by A. Minaev, PRAVDA correspondent, city of Kurgan: "And The Fatigue Disappears...The Psychologist in industry."]

[Text] Having become fairly tired out while on the road, I happened to end up at the Kurganpribor Association; the people I talked to there seemed tired also. This is probably why the Association director Ye. Taranov suggested, "Why don't we go into the psychological unloading room for a few minutes?"

And there it was--a spacious and cozy place, with comfortable arm-chairs. The lights were out and organ music was heard from unseen speakers. And there were color pictures on a large screen: first a seascape, and then a mountain landscape, a wheat field, a forest glade with mushrooms and birds in a blue sky. And on the background of all this was the quiet, even voice of a narrator: "Get rid of the tension, let your arms go limp..."

When the lights flashed ona quarter of an hour later, I felt like "another person altogether", without exaggeration. The tension went to sleep--it was as if there had never been a difficult day full of urgent business...

"We have worked out approximately 20 different unloading programs," stated A. Grachev, candidate of psychological sciences and director of the Social Psychology Research Laboratory. "Dozens of people come into this room every day..."

For example, those who wind the magnetic armatures, coils and rods not only pack the wire closely--coil to coil, but they are constantly counting them. This requires a good deal of concentration and the workers tire rather quickly. During their shift, radio assemblers must also probe the depths of the thinnest of apertures many times with thin rods and other instruments andpperform complex operations in the very "womb" of complex apparatus. Their hands and eyes are under constant tension. This becomes evident by mid-shift--defects show up in the work and productivity is lowered. A 10 or 15 minute session in the psychological unloading room, however, brings back a good frame of mind and normal productivity.

The stampers have other problems. One of the important ones is the increased risk of injury. Psychologists and physiologists at Kurganpribor performed a series of tests and told the stampers: "Thursday is the most dangerous day for you." Arrangements have now been made for workers to have 2 additional short breaks on this day, during which people do special exercises. As a result on-the-job injuries have almost disappeared.

In short, not one case of occupational disease has been reported at Kurganpribor. Why? One reason is the constant concern of the administration and labor union committee for public health and for improving work with young reinforcements. The young people come principally from the basic vocational and technical school, and even at the PTU [vocational and technical school] the future workers become acquainted with psychology. Everyone submitting applications for acceptance is invited to the vocational counseling office: "Do you want to find out more about yourself and at the same time choose an occupation corresponding to your psychological and physiological talents?"

Children undergo a test for "psychological compatibility" with their future work. Students from No 40 secondary school are invited here; for them the Kurganpribor Association is a place for putting production into practice. For example, Igor' Churakov, a 10th class pupil, wanted to become a radio assembler after school, but the association physiologist, V. Chikina observed him, suggested various tests and special tasks and counseled him:

"Of course, Igor', you want to choose your own profession, but your own talents indicate that you would be more suceessful in a job as an adjuster of automatic machines and automatic lines."

At the same time, specific, well thought-out advice is given to others, not just to beginning workers. People listen to this--who doesn't want to work to the maximum of his potential?

This is a good spot to interject some figures: During the last five-year plan, association collectives increased the amount of production by 87.5 percent, which is a good deal higher than the plan, without increasing the number of workers. Almost 98 percent of products made here are accepted when first submitted. Of course, the psychologists by themselves have not been responsible for the success, but their contribution to the progress of the enterprise is unquestionable.

Good working conditions are considered a reliable foundation for the collective's success at Kurganpribor, and specialists help to improve these conditions. Besides the main laboratory for research in social psychology, staffed by 30 workers, there are also psychologists in 9 of the largest shops. Their domain encompasses varied responsibilities. They are concerned both with people's physical and mental health and with improving the organization of production and labor. They also make recommendations to the foremen, brigade leaders and chiefs of the shops on how to form relationships with subordinates and to find an individual approach to each one, how to maintain creative tone and a business-like state of mind in the collective. Of course the plant psychologists get support in their work

for the party and labor union organizations, the social organs of the collective. Experiments in this direction are being activity supported by the general director of the Association, Ye. Taranov--who, incidentally, is himself a candidate of psychological sciences.

Not long ago, recommendations for more efficiently supplying various classes of workers were made, with input from psychologists; these are already being implemented. They are making the introduction of brigade forms of labor organization in the plant a good deal easier. The social psychology aspects of adaptation of workers, particularly young ones, in the brigade are being looked at especially carefully.

Psychologists and physiologists do not solve their complex problems in isolation from one another. They work together in more than 10 scientific institutions, having concluded agreements on creative collaboration with them. Scientists at psychology institutes of the USSR Academy of Sciences, and the Nuclear Physics Institute, USSR Academy of Sciences, Siberian Section have been of considerable help.

12262
CSO: 1840/421

UDC 15:301.085

STUDY OF SOCIO-PSYCHOLOGICAL CLIMATE OF GROUP STRUCTURE

Tbilisi SOOBSHCHENIYA AKADEMII NAUK GRUZINSKOY SSR in Russian Vol 108, No 1, Oct 82 (manuscript received 18 Jun 82) pp 189-192

BELKANIA, N. V., Tbilisi State University

[Abstract] The goal of this study was to reveal the structure of socio-psychological group climate. Using the questionnaire method on 119 production groups at the Rustansk metallurgical plant, the following was examined: style of leadership and management, psychological pressure exerted by the management on labor force, workers' attitudes to their jobs, group solidarity, self evaluation on the input into the overall effort, evaluation of the performance of supervisors and acceptance of group decisions. The following was reported: a democratic leader does not exert psychological "pressure" on the team; the workers headed by a democratic boss like their work much more than those headed by an autocratic chief; a democrat follows the goals more than an autocrat; members of a democratically-administered group tend to credit their leader with the accomplishments of the goals more than those led by autocrats; democratically led groups show greater solidarity than the autocratically led counterparts. The increase in group's solidarity results in lesser acknowledgment of individual input into the total effort, but the workers in such a group are conscious of fulfillment of their effort. Solidarity of a group is inversely proportional to its size. The difference between the real needs and the desired achievements is lower among the workers headed by a democratically oriented leader. References 6: 5 Russian, 1 Western.
[432-7813]

VETERINARY MEDICINE

UPDATE ON LIVESTOCK PRODUCTION TO MEET USSR FOOD PROGRAM REQUIREMENTS

Moscow VETERINARIYA in Russian No 5, May 83 pp 3-5

[Article by L. P. Malanin, Main Veterinary Administration, USSR Ministry of Agriculture: "On the Level of Current Requirements"]

[Text] The food program of the USSR has defined the objectives pertaining to providing the public with foodstuffs by means of further development of the livestock industry. They can be met on the basis of increasing the number of animals, augmenting productivity of cattle and fowl, improving herd reproduction and veterinary care. Reduction of loss due to animal diseases, obtaining healthy offspring and maximum preservation of stock serve as an additional reserve to fulfill the outlined program.

On the basis of progressive knowhow and persistent adoption in practice of new methods, means and resources for preventive and therapeutic work, many veterinary specialists at the farms are actively involved in performing tasks concerned with augmenting the yield of livestock products.

Agricultural agencies are taking steps to refine the technology of livestock raising, introduction of the flow-line shop system of milking. In all farms, herd reproduction is being improved and the reliability of veterinary and sanitary measures has increased. This has enabled many kolkhozes and sovkhozes to fulfill plans for production and sale of farm products to the state.

In 1982, good indicators of herd reproduction and preservation of animals were achieved by specialists in Ulyanovsk, Moscow, Leningrad, Novgorod Oblasts, Krasnodar and Stavropol Krays, Bashkir and Chuvash Autonomous Republics of the Russian Federation, Ternopol, Crimean and Lvov Oblasts of Ukrainian SSR, Moldavian SSR and Uzbek SSR. They have achieved a yield of 84 calves, more than 1400 piglets and up to 130 lambs per 100 female animals.

The performance of the veterinary service merits high praise at the kolkhozes imeni Lenin (chief physician N. Yu. Sadlo) in Yavorovskiy Rayon and "Dawn of Communism" (B. I. Polyak) in Stryyskiy Rayon of Lvov Oblast, the "Saki" Sovkhoz (N. P. Ivanov) in Crimean Oblast, the kolkhoz imeni Sverdlov (K. Kh. Abul'fanov) and dairy complex of the "Krasnoyarsk" Sovkhoz (N. M. Kulakov) in Ulyanovsk Oblast, the "Lenin Ray" Kolkhoz (V. N. Sharlay) in Moscow Oblast, where 97-105 calves are produced per 100 cows. At the Rokay Kolkhoz in Lithuanian SSR and the swine-raising complex "Kalityanskiy" in Kiev Oblast,

20 or more piglets per basic sow are being obtained per year, and virtually the entire stock survives.

The achievements do not appear on their own. They are the result of a creative approach to adoption in practice of scientific recommendations and progressive knowhow in early detection and prevention of diseases, as well as treatment of animals. Veterinary workers use effective methods and agents for the prevention of diseases and death of livestock; they devote much attention to use of new therapeutic and preventive agents, premixed feed, vitamins, growth stimulators, trace elements and other biologically active substances.

However, problems of improving herd reproduction, lowering animal morbidity referable to noncommunicable diseases and raising herd preservation have not been completely resolved. There are still farms where there is a shortfall of 20-25 calves, 20 lambs, 500-600 piglets per 100 female animals.

Little attention is being given to herd reproduction by the zootechnicians and veterinary specialists in a number of farms in Kazakh SSR, Georgian SSR, Azerbaijan SSR, Tambov, Ryazan, Saratov and Bryansk Oblasts of the RSFSR. In such rayons as Perelyubskiy and Krasnopartizanskiy in Saratov Oblast, last year only 54 and 60 calves per 100 cows were produced; at the Korneyevskiy Sovkhoz in Kaluga Oblast 60 were produced and at the Burmenskiy sovkhoz in Altay Kray--52.

The principal causes of low yield of young stock are referable primarily to inadequate feeding, which leads to impairment of metabolism, functional disorders of reproductive organs, birth of weak, unviable offspring and sterility; failure to adhere to upkeep technology; unsatisfactory preparation of female animals for producing offspring, particular during the period of indoor [barn] maintenance.

At the same time, the veterinary service in the above-mentioned rayons, oblasts and republics does not impose the proper requirements on farm managers and specialists, as well as those in complexes and pedigreed livestock enterprises, with regard to providing appropriate sanitary conditions there, and there is poor supervision of the quality of performance at artificial insemination centers.

It should be noted that producing healthy offspring and preserving it, which are based on a set of organizational-management, zootechnical and veterinary-sanitary measures, mandatory adherence to veterinary rules on all levels of this complex technological chain, depend greatly on organization of veterinary and sanitary schedule of artificial insemination, preparation of females for producing offspring, providing zoohygienic and sanitary conditions for producing and raising young stock.

The technology of pedigreed livestock raising, which was developed by science, makes it possible to obtain products free of bacterial contamination. Vast experience has been gained in improving the sanitary quality of sperm at the pedigreed stock enterprises of Krasnodar Kray, Leningrad, Kuybyshev, Moscow and other oblasts of RSFSR, Crimean Oblast in Ukrainian SSR, Moldavian SSR, Estonian SSR and Lithuanian SSR. At the initiative of veterinary specialists, there is strict supervision of fulfillment of veterinary-sanitary

requirements, and the regular staff of artificial insemination centers includes specialists--microbiologists who check the sanitary quality of the products.

At the same time, at some pedigreed stock farms, the technology is not adhered to: sperm with a high level of bacterial contamination is stored. A high percentage of defective sperm with regard to sanitary indicators is produced at pedigreed stock farms of Kazakh and Kirghiz SSR. There is unsatisfactory inspection of sperm quality and safety of agents used in artificial insemination at pedigreed stock enterprises of Kalinin, Penza, Kaluga, Chelyabinsk, Bryansk and a few other oblasts of the Russian Federation. At the same time, the veterinary departments of these oblasts are not taking the appropriate steps to intensify veterinary-sanitary conditions at the main and zonal artificial insemination stations.

The absence at many farms of standard artificial insemination centers, while existing ones are sometimes located in poorly equipped buildings, also have an appreciable effect on herd reproduction. Little attention is given to outfitting standard artificial insemination centers at dairy farms in Tajik SSR, Uzbek SSR, Kirghiz SSR and some oblasts of RSFSR.

The problem of training personnel to service artificial insemination centers is also being resolved too slowly. More than two-thirds of all workers in this category are allowed to service such centers after brief training; they do not have adequate knowledge, their education and retraining are poorly organized.

Veterinary agencies of rayons, oblasts, krays and republics must increase their requirements of specialists at farms and pedigreed stock enterprises with regard to mandatory adherence to veterinary rules of reproduction. Serious ["business-like"] proposals should be offered more actively to improve herd reproduction, organize artificial insemination for consideration by agricultural agencies. Together with institutions concerned with pedigreed stock farming, veterinary specialists should render effective practical and scientific-consultant assistance to pedigreed stock enterprises and farms.

The health of young livestock is a constant concern of veterinarians. It must be manifested starting at the early stages of gestation. Special attention should be devoted to early detection of diseases related to metabolic disturbances in this group of animals. Prevention of such diseases by farm specialists should be based on systematic dispensary care of female animals, checking the condition of animals in the postpartum period, quality of feed and food allowance.

Such technological procedures as isolation of dry cows and heifers in the advanced period of gestation into special groups, feeding animals with consideration of their physiological condition and mandatory exercise for cattle make it possible to avoid diseases due to metabolic disturbances. All of these elements are taken into consideration in the flow-line shop system of milking and herd reproduction, which is also instrumental in improving the veterinary-sanitary conditions of farms, as well as better preservation of

young livestock. At the present time, this system is being introduced on a broad scale at farms in many oblasts of Ukrainian SSR and the Russian Federation, Moldavian SSR and other republics.

The veterinary specialists at many farms, who make use in their work of the latest scientific advances and progressive knowhow in the matter of increasing survival rate of young livestock, are actively involved in introduction of progressive technology, procedures and systems.

Prevention of metabolic disturbances is considered the principal task in obtaining healthy young livestock at the "Smil'gay" Kolkhoz in Panevezhskiy Rayon of Lithuanian SSR, where the veterinary service is headed by R. A. Rekashyus. Specialists check the quality of all feed procured at the farm. Under the supervision of veterinary workers, the livestock breeders are concerned in good time about the required stock of vitamins, minerals and other supplements, as well as therapeutic and preventive agents. All cows are submitted to dispensary examination and, on the basis of its results, effective steps are taken to prevent metabolic disorders.

These steps enable the livestock breeders at this farm to reliably prevent disease among cows and newborn stock, as well as reduce to a minimum the expenses for treatment of animals.

Scheduled implementation of measures to prevent cow morbidity at farms in Stryyskiy Rayon of Lvov Oblast, Simferopolskiy and Sakskiy Rayons of Crimean Oblast has resulted in production of healthy offspring and 95-100% survival.

Experience in dairy cattle breeding has shown that introduction of only such technological proce dures as use of maternity departments with stalls for calving, keeping calves in section preventoriums with adherence to the principle of "vacant--occupied" reduces considerably morbidity of young livestock and prevents postpartum diseases of cows.

Unfortunately, such technology is being introduced slowly in a number of regions. There are no maternity departments and preventorium facilities are scarce at many dairy farms of Bryansk, Tula, Penza and some other oblasts of RSFSR, Belorussian SSR, Georgian SSR and Latvian SSR. Calving takes place there directly in the cow barns. The calves are placed in the feed passageways, in a draft, and this leads to a high morbidity rate.

Veterinary specialists should insistently demand that farm administrators adopt progressive technology on a wide scale, which would assure production of healthy offspring, prevention of diseases of maternal stock and high survival rate of young livestock.

Prompt detection and prevention of gynecological diseases, as well as effective treatment of animals, should gain an important place in the system of measures dealing with improvement of herd reproduction.

Work on prevention of postpartum complications as a result of dispensary gynecological-obstetric care of cows has been set up well in the "Daynava" Kolkhoz in Lithuanian SSR. Veterinary specialists at this farm (chief veterinarian G. Yu. Vasauskas) have virtually eradicated animal sterility.

In the republic as a whole, efficacy of therapeutic measures exceeded 85% in 1982, and constituted up to 90-95% in rayons such as Klaypedskiy, Shyaulyayskiy and Kapsukskiy. There, early gynecological dispensary care of cows is implemented--on the 4th-5th and 10th-12th postpartum days the reproductive organs are checked, and this permits early detection of sick animals. They are treated at farms in accordance with schedules proposed by the republic's veterinary station.

A day has been set aside in Estonian SSR for gynecological and general dispensary examination of cows in all of the farms.

The performance of the veterinary service at the "Privolzhskiy" Sovkhoz (chief physician [veterinarian] Yu. I. Derey) and "Volga" Kolkhoz (R. G. Fetkulov) in Ulyanovsk Oblast merits attention: the specialists at these farms devote much attention to introduction of scientific advances and progressive knowhow. There, sanitary rules are strictly followed and quartz lamps used in calving [maternity] departments and preventoriums. Steps to prevent morbidity and mortality are based on strict adherence to technology of feeding and upkeep of livestock, following a veterinary-sanitary regimen for producing and raising young stock. At the "Pobeda" Kolkhoz in Kanevskiy Rayon, Krasnodar Kray, the veterinary specialists have achieved strict adherence at the farms to technology of upkeep and feeding female producer stock and high survival rate of young livestock.

However, veterinary workers at farms and complexes are not properly organizing work to obtain and preserve healthy offspring in all locations.

Expressly this explains the high morbidity and death rate among young livestock due to gastrointestinal and respiratory diseases in several farms of Latvian SSR, Belorussian SSR, Armenian SSR, Kaluga, Saratov, Kurgan Oblasts and Chuvash ASSR of the Russian Federation.

Such a highly effective form of veterinary care as organization of therapeutic-sanitary and therapeutic-preventive centers is being practiced more and more in farms of Kazakh SSR, central Asian republics and several oblasts of the Russian Federation.

The great experience in operating LSP [therapeutic-sanitary centers?] in farms of Pavlodar Oblast of Kazakh SSR, Krasnodar Kray, Chelyabinsk, Rostov and other oblasts of RSFSR graphically illustrate this form of organization of prevention of noncommunicable diseases. The efficacy of therapeutic measures at LSP's in Krasnokutskiy, Pavlodarskiy and Yermakovskiy Rayons of Pavlodar Oblast constitutes 97%, whereas at the "Kharkovskiy" Sovkhoz in Krasnokutskiy Rayon it is 100%. The successful work of these centers is assured by the initiative of farm specialists, who have obtained the location of LSP's in specially outfitted premises, allocations of feed, vehicles for transportation, necessary instruments and therapeutic-preventive agents.

Yet, in recent times, work on expanding the LSP network has diminished in several republics, whereas the number of such centers even diminished in Alma-Ata and North Kazakhstan Oblasts of Kazakh SSR.

There are virtually no functioning LSP's in Naryn Oblast of Kirghiz SSR. At many of the farms, they have been converted into transfer bases for delivery of animals to meat-packing plants.

There must be basic change in attitude of agricultural agencies and veterinary services of the republics, krays, oblasts and rayons toward the work of LSP's. It is imperative to take effective steps to strengthen existing LSP's and establish new ones.

The solution of these problems will make it possible to improve substantially the effectiveness of work of the veterinary service, and it will be instrumental in performing the large and important tasks put by the 26th CPSU Congress, the May and November (1982) plenums of the Central Committee of the Party related to further increasing production of livestock products.

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CSO: 1840/494

CHERKASSY OBLAST VETERINARY SERVICE REPORT ON LIVESTOCK CARE

Moscow VETERINARIYA in Russian No 5, May 83 pp 12-13

[Article by V. V. Soplenko, chief physician at Veterinary Department of Cherkassy Oblast: "Reports From Initiators of All-Union Socialist Competition--Our Contribution"]

> [Text] Cherkassy Oblast was awarded the Challenge Red Banner of the CPSU Central Committee, USSR Council of Ministers, AUCCTU and Komsomol Central Committee for its achievements in the All-Union Socialist Competition honoring the 60th anniversary of formation of the USSR. The same awards were conferred upon Gorodishchenskiy, Drabovskiy, Zolotonoshskiy, Cherkasskiy and Chernobayevskiy Rayons, as well as the following kolkhozes: "Dnipro" and "Mayak" in Cherkasskiy Rayon, "Radyans'ka Ukraina" in Chernobayevskiy Rayon, "Druzhba" in Chigirinskiy Rayon and "Kommunist" in Shpolyanskiy Rayon.

Veterinary workers of this oblast are maintaining a stable condition of epizootic welfare with regard to infectious diseases as they implement the regularly scheduled set of veterinary and sanitary measures, introducing scientific achievements and progressive knowhow to practice, and this is largely instrumental in increasing cattle productivity and product quality.

As a result of a creative approach to implementation of therapeutic and preventive measures, well thought-out use of modern methods of diagnosing diseases, the specialists of this oblast achieved 98% survival of cattle and pigs, and 95.3% for sheep in 1982.

The success of livestock breeders in this oblast is largely due to a firm stock of biologicals. In the winter of 1982-1983, the specialists produced and used over 120 tons of feed antibiotics, more than 11 tons of serum from recovering animals, 12 tons of iodinol, almost 50 tons of Sharabrin liquid, about 3 tons of citrated blood, 2.5 tons of gastric juice and at least 11 tons of polyvalent salts of trace elements.

The veterinary specialists constantly devote their attention to improvement of herd reproduction, prevention of sterility and control of gynecological diseases among the animals. Together with the farm zootechnicians, they are keeping a careful watch over the upkeep and proper feeding of livestock,

preparation of females for calving. And, although more than 80 calves and 1490 piglets were produced per 100 dams last year, it is imperative to do much more to augment the yield of offspring and eliminate sterility.

The staffs of veterinary laboratories constantly inspect the physiological condition of animals, periodically testing up to 10% of blood samples from all the livestock for calcium, phosphorus, carotene and reserve alkalinity. When necessary, the appropriate substances were added to the food allowances.

In this oblast, it has become a tradition to hold socialist competitions among veterinary specialists. For last year's achievements, the veterinary service of Cherkasskiy Rayon, which is headed by chief physician A. M. Moroz, was recognized as the victor. Veterinary workers of this rayon have obtained 99.5% survival of livestock and swine and 99.3% for sheep. A total of 90 calves and 1490 pigs were produced per 100 dams.

The specialists of Chernobayevskiy Rayon also worked well in 1982, having won second place in the socialist competition. The well-organized team of veterinary workers, headed by chief physician Ye. M. Khvyl', achieved a high rate of livestock survival and yield of offspring because of the good organization of therapeutic and preventive measures.

The stable good condition of the farms in this rayon, with respect to absence of many infectious and invasive diseases, has enabled the livestock workers to obtain over 3000 kg milk from cows and more than 160 quintals of meat per 100 hectares farm land.

The veterinary service of Korsun-Shevchenkovskiy Rayon was awarded third place.

Virtually all of the cattle and swine survive in the region serviced by the Ratsevskiy veterinary uchastok, the victor of the socialist competition among hospitals and districts.

Ye. V. Kucher, who heads this uchastok, is an experienced administrator and organizer, and he constantly upgrades the forms of veterinary care of animals, obtaining stable welfare at the farms with respect to infectious diseases; he checks to see that scheduled epizootic-control measures are implemented and that records are properly kept.

The team in Lukashevskiy Uchastok of Chernobayevskiy Rayon was awarded second place with good cause, while third place was awarded to the Vyazov Uchastok Hospital in Gorodishchenskiy Rayon.

First place among farm veterinary services was won by the veterinary workers at the kolkhoz imeni Zhdanov in Shpolyanskiy Rayon. Thanks to proper organization of work on herd reproduction, thorough screening and the staff of veterinary specialists, 97 calves are obtained there per 100 cows and 99% of the young stock survives. Reliable protection of the animals' health, strict adherence to veterinary and sanitary rules were the basis of high cattle productivity. In this farm, more than 3670 kg milk was produced per cow and all of the milk delivered to the state was of first quality.

The teams of veterinary workers at the kolkhozes imeni Lenin in Gorodishchenskiy Rayon and "Progress" in Smelyanskiy Rayon were awarded second and third place, respectively.

This oblast's veterinary specialists are not relaxing in their struggle for welfare at the farms with respect to infectious diseases, fulfillment of the plans for yield of offspring and maximum survival of young livestock.

Responding with action to the decisions of the May (1982) plenum of the CPSU Central Committee, for the third year of the 11th Five-Year Plan the oblast's veterinary workers have taken on greater socialist obligations: to assure 98.9% survival of cattle, 98.6% for pigs and 97.0% for sheep; to obtain 88 calves, 1500 piglets and 90 lambs per 100 dams, and to sell milk to the state that is 92% first grade. In addition, work will be continued to improve organizational-management, preventive and veterinary-sanitary measures, to introduce on a broad scale to practice the achievements of science and progressive knowhow, as well as to further strengthen the feed base.

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PLENUM OF VETERINARY PHARMACOLOGICAL COUNCIL

Moscow VETERINARIYA In Russian No 5, May 83 p 77

[Article by M. V. Silayeva and Ye. A. Lomova]

[Text] In his opening remarks at this plenum, L. P. Malanin, deputy head of the Main Veterinary Administration of the USSR Ministry of Agriculture, commented on the large job done by the council in the area of introducing new pharmacological agents, products used for therapeutic-preventive purposes and to increase productivity of animals; he also defined the tasks for the council to improve this work.

Prof D. D. Poloz, chairman of the Veterinary Pharmacological Council, who delivered a report on the work of the council, stated that about 200 matters were examined in the past year dealing with trial of new domestic and foreign agents. Work has improved considerably in the area of reporting the council's recommendations in the press. The main task facing the council is to intensify supervision of trial and introduction of new drugs.

A. S. Selivanova, scientific secretary of the council, informed us about the decisions of the council's presidium pertaining to practical testing, broad experimentation and introduction of new drugs.

T. P. Veselova talked about the plan for the council's work in 1983.

The participants at the plenum offered several suggestions to upgrade the work of the council.

The plenum participants then heard papers on problems of veterinary pharmacology and toxicology.

Ya. A. Vetra (Experimental Production Laboratory of the Latvian Scientific Research Institute of Livestock Breeding and Veterinary Science) discussed the tasks put to the laboratory of studying new veterinary products.

I. V. Petrukhin (VGNKI [All-Union State Control Scientific Research Institute of Veterinary Preparations]) reported on the main criteria for assessing the safety of feed and feed supplements used in modern livestock breeding.

R. A. Ortman (Orenburg Agricultural Institute) dwelled on pharmacokinetics of sulfanilamides with long action and discussed the prospects of using them in veterinary practice.

A. I. Kirillov (VNIVIP [All-Union Scientific Research Institute of Veterinary Science?]) reported on the use of domestic and foreign coccidiostatic agents in poultry farming.

P. D. Yevdokimov (Leningrad Veterinary Institute) discussed the objectives and tasks of clinical veterinary pharmacology.

A. I. Kanyuka (Lvov Zooveterinary Institute) reported on the sources of animal poisoning by heavy metal salts, identification of such poisoning and treatment of animals stricken by it.

I. V. Sidorov (VIEV [All-Union Institute of Experimental Veterinary Science]) touched upon toxicological evaluation of organochlorine pesticides, pathogenesis and prevention of animal poisoning by them.

N. P. Biryukova (VGNKI) acquainted the participants of the plenum with the results of testing and registering foreign veterinary products.

The plenum adopted a resolution, which contains steps for upgrading the council's work. It was decided to intensify supervision of testing of new drugs, which is done at scientific research institutions and VUZ's.

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CSO: 1840/494

MISCELLANEOUS

UDC: 612.822.3+612.825.54

INFLUENCE OF SPATIALLY STRUCTURED STIMULUS PARAMETERS ON EVOKED VISUAL AND POSTERIOR-ASSOCIATIVE CORTICAL POTENTIALS IN MAN

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA
in Russian Vol 32, No 6, Nov-Dec 82 (manuscript received 15 Jun 81)
pp 1124-1131

TOLSTOVA, V. A. and ZISLINA, N. N., Scientific Research Institute of Defectology, USSR Academy of Psychiatric Sciences, Moscow

[Abstract] A study was made of the evoked potentials of the visual and posterior-associative areas of the cerebral cortex in man in response to structured stimuli differing in area and size of component elements and the number of their orientations. Stimuli in the form of checkerboard fields and grids drawn in black on white were presented with a portion of the pattern masked with black paper so that the subject saw a white circle against a black background with the fixation point at the center of the circle. The stimulus was illuminated by a 10 ms flash. Two series of studies were performed. In series 1, checkerboard fields with various square sizes from 12 to 60 angular minutes were used with a total stimulus size of 5 degrees. In series 2, grids were used with fixed angular stripe size 24 minutes, varying in area from 3 to 8 degrees and in number of orientations of stripes: 1 or 2 divided by a horizontal line. The evoked potentials of the posterior-associative area of the human visual cortex were found to be sensitive to spatially structured stimuli of both types, with the amplitude of component P100 varying with the number of orientation of stripes in the grid by invariant to the area of the stimulus and the size of its elements. Component P100 was invariant to the area of the structured stimulus but changed with a variation in the area of a homogeneous field and the number of orientation of stripes in a grid. The P200 wave characteristically varied with checkerboard square size and had a maximum amplitude for a square size of 24 minutes. Figures 3; references 22: 6 Russian, 16 Western. [496-6508]

UDC: 612.822.3+612.821.7

SIGNIFICANCE OF THE CEREBRAL HEMISPHERES IN IMPLEMENTING ADAPTIVE MECHANISMS IN MAN (UNDER SLEEP DEPRIVATION CONDITIONS)

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian Vol 32, No 6, Nov-Dec 82 (manuscript received 30 Mar 82) pp 1164-1166

VEYN, A. M., DALLAKYAN, I. G., LEVIN, Ya. I. and SKAKUN, K. E., Department of Autonomic Nervous System Pathology, First Moscow Medical Institute imeni I. M. Sechenov; Reflex Neurosis Therapy Laboratory, Central Scientific Research Institute of Reflex Therapy, Moscow

[Abstract] A study was made of the significance of interhemisphere interactions under conditions of sleep deprivation in the implementation of adaptive mechanisms of the organism to stress situations. Studies were performed on 20 healthy male subjects 20 to 26 years of age. Psychological tests were administered under normal conditions and after 24 to 28 hours of sleep deprivation: the Bourdon correction test; functional test loads on the cerebral hemisphere (verbal, simple and complex, nonverbal, simple and complex) the Spielberger test (reactive and personal alarm). In night sleep polygrams recorded in the background state and during the first sleep after 36 hours sleep deprivation, particular attention was given to the dynamics of the stages of sleep and manifestations of the skin galvanic reflex by stages and cycles of nocturnal sleep. After 24 to 28 hours of sleep deprivation there was an increase in the reactive and a decrease in personality alarm, a decrease in the total number of errors in the Bourdon test (attention test). There was a significantly smaller number of errors in the left visual field. Sleep deprivation decreases the number of errors in performing both simple verbal and simple nonverbal functional tests. Thus, one-time sleep deprivation causes certain changes in psychological status, some of which--changes in performance of verbal and nonverbal loads and the Bourdon test--may indicate activation of the right hemisphere. This is also confirmed by an increase in delta sleep and an increase in the skin galvanic reflex recorded in the 4th stage of cycle 1 sleep on the left hand. References 5: 4 Russian, 1 Western. [496-6508]

UDC 612.821

VOLUNTARY REGULATION OF THE ALPHA- AND THETA RHYTHMS OF THE HUMAN EEG

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 8, No 5, Sep-Oct 82 (manuscript received 15 Feb 82) pp 817-821

CHERNIGOVSKIY, V. N. (deceased), MARKMAN, V. G. and AVSARKISYAN, A. N., Institute of Physiology imeni I. P. Pavlov, USSR Academy of Sciences

[Abstract] A study of the possibility of voluntary regulation of alpha- and theta-rhythms with extrinsic feedback included 160 healthy males

(ranging in age from 20 to 31 years). The original EEG, in central and parietal obductions, displayed by the alpha- and theta-rhythms and the EKG were recorded. A considerable number of the subjects could regulate alpha- and theta-rhythms under the conditions of the experiment (36 percent increased the alpha rhythm and 53 percent decreased the theta rhythm). These changes occurred only in the presence of appropriate feedback. The EEG regulation was somewhat generalized in the early stages of training. Changes in heart rate in tests with feedback showed a regular non-specific activation for the first session. There were no significant differences in this indicator between situations of increasing the alpha rhythm or decreasing the theta rhythm. Figures 2; references 17: 5 Russian, 12 Western.
[435-2791]

UDC 612.014.421+612.014.423

RELATIONSHIP OF MENTAL AND NEUROPHYSIOLOGICAL PHENOMENA AND BIOLOGICAL FEEDBACK

Moscow FIZIOLOGIYA CHELEVEKA in Russian Vol 8, No 5, Sep-Oct 82 (manuscript received 26 Dec 80) pp 846-850

SARMANOV, V. Ya., Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow

[Abstract] A study of EEG of 10 healthy subjects (four males) ranging in age from 20 to 35 years showed that biological feedback may be used to form a stable psychoemotional state. Individual characteristics of the electrical activity of the brain of the subjects (alpha rhythm index and beta rhythm could be used as an indicator in the feedback loop. Amplitudinal changes of rhythmics, during this, provided little information. It was found that it is best to use the integral response of the electrical activity, the spatial synchronization indicator, to assess formation of a stable psychoemotional state. References 19: 15 Russian, 4 Western.
[435-2791]

UDC 612.821.2+612.822.3

CORTICAL EVOKED NEGATIVE WAVE AS REFLECTION OF SELECTIVE ATTENTION

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA in Russian Vol 32, No 5, Sep-Oct 82 (manuscript received 3 Dec 81) pp 826-833

IVANITSKIY, A. M. and STRELETS, V. B., All-Union Scientific Research Institute of General and Forensic Psychiatry imeni V. P. Serbskiy, Moscow

[Abstract] Electrophysiological studies were conducted on healthy subjects to determine neurophysiologic mechanisms of selective attention. Evaluation

of the cortical evoked negative wave in response to the more significant of two paried electrocutaneous stimuli showed that the early response consisted of two components with latent periods of 140 and 200 msec. The first peak showed maximum manifestation in the projection area of the analyzer under conditions of both voluntary and involuntary attention and was evidently a reflection of the selective activation of the cortex by the ascending thalamocortical system. The second negative peak was recorded only in voluntary attention and consisted of a diffuse spread over the cortex, evidently reflecting activation of the cortex by the mesencephalic reticular formation. Figures 3; references 22: 7 Russian, 15 Western.
[353-12172]

UDC 612.822.3+612.821.8

FUNCTIONAL CHANGES IN THE CENTRAL NERVOUS SYSTEM DURING MUSIC PERCEPTION (PROBLEMS IN STUDIES ON POSITIVE EMOTIONS)

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI IMENI I. P. PAVLOVA
in Russian Vol 32, No 5, Sep-Oct 82 (manuscript received 12 Feb 82)
pp 915-924

ZAKHAROVA, N. N. and AVDEYEV, V. M., All-Union Scientific Research Institute of General and Forensic Psychiatry imeni V. P. Serbskiy, Moscow; Moscow State Conservatory imeni P. I. Chaykovskiy

[Abstract] Studies were conducted on alterations in the functional state of the central nervous system in response to music perception by 19-25 year old males on the basis of certain physiological parameters (heart rate, respiratory rate, ECG, galvanic skin response). The cohort consisted of music students at a conservatory and individuals without any formal musical education. The results showed that perception of classical and contemporary (jazz) pieces altered a number of the physiological parameters of interest via flow of information along the corticothalamic and the corticolimbic circuits. In particular, there was partial replacement of the normally dominant alpha rhythm by beta, theta, and delta activity, initial attenuation of the galvanic skin response, accelerated heart rate (particularly in the musicians), and slowdown of the respiratory rate (especially in the nonmusicians). Differences were also noted in response to the type of music and its effects on the emotional state of the subject. Figures 2; references 27: 24 Russian, 3 Western.
[353-12172]

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