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937C0003A Moscow VETERINARIYA in Russian No 3, Mar 92 pp 24-25

[Article by L. P. Rusanova, V. I. Baranov, A. S. Lysukho, N. A. Fedorova, A. E. Avakov, V. N. Denisenko; UDC 619:616-07:636.22/.28]

[Abstract] Respiratory diseases are widespread among young cattle, and in most cases, the diseases are caused not by merely one pathogen, but by an association of viruses and bacteria. The mixed etiology of many diseases leads to the absence of typical clinical symptoms, which means that traditional virological and serological techniques for identifying the diseases must be prompt and reliable. Those techniques, however, take 20-40 days to produce a diagnosis. Soviet and foreign researchers have developed a fundamentally new diagnostic technique based on DNA probes that use molecular dot hybridization and produce results in 48 hours. They can identify viruses in mixed infections. One probe, which identifies the infectious rhinotracheitis virus, is a recombinant plasmid created on the basis of the pUC-19 vector and the Hind III-Eco I fragment 1,800 bp from the left segment of the genome for the infectious rhinotracheitis virus. The other probe, for adenoviruses, was made by cloning the C-Eco I fragment of the Ad KRS 3 DNA, which bears the hexon gene with DNA sites similar for all adenoviruses. Both probes are $_{32}$P-labelled and can identify 10-50 pkg of viral DNA. The probes were tested on 412 calves on nine farms in Rostov Oblast. References 9: 7 Russian, 2 Western.

New Prophylactic Drugs and New Measures for Controlling Rinderpest (Survey of Foreign Literature)

937C0003B Moscow VETERINARIYA in Russian No 3, Mar 92 pp 31-33

[Article by F. P. Kurchenko, G. A. Kurchenko, N. G. Shepel; UDC 619:616-084:616.988.27:636:22/.28]

[Abstract] Rinderpest has long been one of the most devastating diseases among livestock, and repeated attempts to eradicate it have met with only temporary success. The two vaccines traditionally used to control it—GRV and RTCV—have drawbacks serious enough to render them generally ineffective. GRV produces reactions that often lead to post-vaccination death, and RTCV must be stored under such carefully controlled conditions that after even 30 minutes out of refrigeration, it becomes inactivated. Researchers at University of California at Davis, however, have developed a thermally stable recombinant vaccine based on the H and F proteins, which are responsible for developing virus-neutralizing antibodies in the bodies of sensitive animals. In tests, the preparation, with an activity of 10^8 PFU, resulted in the production of antibodies neutralizing the virus by day 14. On days 35-42, animals were reinfected with the virus experimentally, but all remained healthy. Similar vaccines have been developed in Tokyo and Fujiyama, as well as in Great Britain. References: 21 Western.

Roslin Toxicology

937C0030B Tashkent DOKLADY AKADEMII NAUK RESPUBLIKI UZBEKISTAN in Russian No 4-5, Apr-May 92 (manuscript received 18 Dec 91) pp 78-79

[Article by Zh. Rezhepov, F.N. Dzhakhangirov, Kh.A. Abduazimov and T.S. Kaplunova, Order of the Red Banner of Labor Institute of Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan; UDC 615.917]

[Abstract] Toxicity studies on roslin, a new plant growth regulator with fungicidal properties, showed it to be relatively nontoxic for white mice (LD_{50} = 5375 mg/kg) and rats ((LD_{50} = 8400 mg/kg). Roslin was also innocuous on topical application (mice, rats, rabbits), nonallergenic (guinea pigs), and nonmutagenic (rat bone marrow assays). Similarly, per os administration of roslin to male and female rats for 30 days was also without discernible adverse effects, and thus roslin was concluded to be nontoxic for mammals. References 5: 4 Russian, 1 Western.

Electron-Microscopy Study of Argiopinin-Binding Protein From Membranes of Bovine Cerebral Cortex

937C0002A Moscow BIOLOGICHESKIYE MEMBRANY in Russian Vol 8 No 12, Dec 91 [manuscript submitted 24 Aug 90] pp 1248-1253

[Article by A. N. Barnakov, A. V. Lunev, V. V. Demin, T. M. Volkova, N. A. Avetisyan, Ye. V. Grishin, Institute of Bioorganic Chemistry imeni M. M. Shemyakin, USSR Academy of Sciences, Moscow; UDC 577.352.332:57.086.3]

[Abstract] Freeze-fracture electron microscopy was used to study the organization of argiopinin-binding protein from membranes of bovine cerebral cortex in proteoliposomes. Argiopinin-binding protein (APBP) was inserted into liposomes by means of dialysis from a detergent of a mixture of solubilized lipid and APBP, controlled by electrophoresis. Microphotographs of the proteoliposomes containing the APBP revealed typical intramembrane particles formed by the APBP on the fracture planes. The particles were 9.5 +/- 0.5 nm (N = 100). Those results were duplicated in APBP preparations containing not only a main component of 68 kilodaltons, but also small quantities of polypeptides with molecular weights of 54, 45, and 40 kilodaltons. In experiments involving two-dimensional crystallization of APBP, typical crystals that were produced were 0.2 μm by 0.05 μm in size. The crystals were ribbons of two-dimensional layers curled into tubes. Unit cell parameters were a = 8.3 nm, b = 8.9 nm, and γ = 99°. Since the phases of the reflexes were near either 0° or 180°, Fourier synthesis of the images was done for the bilateral plane group $p2$. The researchers concluded that the APBP forms oligomers containing an average of 4-6 molecules. Figures 4, references 14: 2 Russian, 12 Western.

Molecular Mobility in Hydrated Purple Membranes of Halobacteria Studied With Proton Magnetic Relaxation

937C0002B Moscow BIOLOGICHESKIYE MEMBRANY in Russian Vol 8 No 12, Dec 91 [manuscript submitted 27 Dec 90] pp 1260-1268

[Article by A. V. Maksimychev, V. I. Volkov, Ye. V. Levin, O. V. Gasyuk, V. I. Muromtsev, S. F. Timashev, L. N. Chekulayeva, Scientific Research Physical-Chemical Institute imeni L. Ya. Karpov, Moscow; Institute of Biological Physics, USSR Academy of Sciences, Pushchino, Moscow Oblast; UDC 541.143]

[Abstract] ^1H Proton magnetic relaxation is used to study the mobility of the protein-lipid matrix of purple membranes isolated from *Halobacterium halobium* strain 353-P as well as that of the hydrate shell, in the temperature interval of 210-300 K. Analysis showed that longitudinal relaxation of a purple-membrane/H_2O system can be described as the sum of three kinetic components whose typical spin-lattice relaxation times at 265 K are $T_1^{(1)} = 5$ ms, $T_1^{(2)} = 44$ ms, and $T_1^{(3)} = 630$ ms, with relative contributions to the total signal amplitude of 0.13, 0.42, and 0.45. The change in the transverse magnetization can be described with a single-exponent kinetic equation with a typical spin-spin relaxation time T_2 of 0.25 ms at 250 K. In terms of the dependence of T_2 and T_1 on temperature, abrupt changes in relaxation rates are noted at 273 K and 223 K. At 273 K, there is a dramatic drop in T_2, and further lowering of temperature leads to a growth in the rate of spin-spin relaxation. Below 240 K, the relaxation kinetics of the transverse magnetization reveals a second component that become the only component at temperatures below 230 K. Spin-echo amplitude drops by 80 percent at 273 K. There is a correlation noted in the changes of the nature of the molecular movements of the protons in the protein-lipid matrix and its hydrate shell. The peculiarity noted at 273 K is due to the transition to ice of most of the purple-membrane-bound water. The anomaly noted at 223 K coincides with the temperature at which the photo cycle stabilizes in the intermediate state M as a result of the blocking of the process of reprotonation of the bacteriorhodopsin Schiff base. A gradual diminution of the effective radii of hydration of the functional groups can be assumed to lead to qualitative changes in which the probability of overlap of hydration shells drops sharply. Figures 4, references 43: 9 Russian, 34 Western.

Role of Membrane Lipids in Processes of Recording and Storing Information. I. Effect of Neuropeptide ACTH on Polymorphism of Dipalmithoyl Phosphatidylcholine in Aqueous Dispersions

937C0002C Moscow BIOLOGICHESKIYE MEMBRANY in Russian Vol 8 No 12, Dec 91 [manuscript submitted 18 Feb 91] pp 1269-1274

[Article by G. V. Arkhipova, Ye. B. Burlakova, Ye. A. Kondrasheva, L. I. Murza, Institute of Chemical Physics imeni N. N. Semenov, USSR Academy of Sciences, Moscow; UDC 577.352.38:577.115]

[Abstract] ACTH, which is known to function as a neurohormone, neuromodulator, and neuroregulator in memory and learning, was used as a possible modifier of lipid mesophase states in a study that had a threefold purpose: to develop the conditions necessary for the use of proton magnetic relaxation in recording mesophase subtransitions of dipalmithoyl phosphatidylcholine in aqueous dispersions, to ascertain the conditions supporting the use of spin probes and EPR spectroscopy in studying the polymorphism of the dipalmithoyl phosphatidylcholine/water system, and to study the effect of ACTH on thermally induced phase transitions and mesophase subtransitions in the dipalmithoyl phosphatidylcholine/water system. The researchers were successful in recording first-order phase transition at 42°C (which is fully reversible with heating and cooling) and mesophase subtransition at 35°C (producing hysteresis at 2.5° with heating and cooling). The data were confirmed with a stearic-acid-derivative spin probe and EPR spectroscopy. Incubation with ACTH lead to S-curve changes and to an increase in the area of the hysteresis loop, which is probably related to a change in the polymorphic properties of the dipalmithoyl phosphatidylcholine/water system because of the dehydrating effect of the neuropeptide molecule. The findings suggest the possibility of using neuropeptides to modulate thermodynamically unstable mesophase states of the lipid component of membranes and to convert them into kinetically stable states. Figures 5, references 16: 4 Russian, 12 Western.

Antibody Monolayers as Gravimetric Immunosensors

937C0030B Moscow BIOLOGICHESKIYE MEMBRANY in Russian Vol 9 No 1, Jan 92 (manuscript received 07 May 91) pp 88-93

[Article by T.B. Dubrovskiy of Institute, Biochemistry imeni A.N. Bakh, USSR Academy of Sciences, and by V.V. Yerokhin and R.L. Kayushina, Institutes of Crystallography imeni A.V. Shubnikov, USSR Academy of Sciences, Moscow; UDC 539.216.2:577.112]

[Abstract] A piezoelectric microbalance for analysis of antigen was devised, based on formation of Langmuir antibody films on piezoelectric resonators modified with γ-aminopropyltriethoxysilane, yielding a microgravimetric immunosensor. The method was based on changes in the intrinsic oscillation (8.5-9 Mhz) of the piezoelectric resonator due to the additional weight of the antigen-antibody complex. Studies with human IgG coupled to the immunosensor and reaction with goat antiserum against human IgG showed a sensitivity approaching 0.5 μg/ml. Complementary studies with other antibody-antigen systems showed that the sensitivity of the microbalance has the potential of being improved by one to two orders of magnitude. Figures 4; references 13: 2 Russian, 11 Western.

Behavior of Naturally-Occurring Heavy Radionuclides in Irrigated Soil

937C0023A Moscow EKOLOGIYA in Russian No 1, Jan-Feb 92 (manuscript received 11 Sep 90) pp 16-20

[Article by V.V. Martyushov and V.V. Bazylev; UDC 631.6]

[Abstract] An analysis was conducted on the impact of irrigation on behavior of heavy radionuclides naturally-occurring in tertiary marine deposits used as fertilizer. The results demonstrated that application of 70 tons/ha of the fertilizer had no significant effect on total and 1 M HCl-soluble radionuclides in the soil. However, application of 1200 tons/ha resulted in a 2-to 5-fold increase in total soil concentration of heavy radionuclides and a 4- to 12-fold increase in the acid-soluble fraction. Heavy irrigation accelerated radionuclide washout from the topsoil into deeper horizons. The rate of washout followed the standard reqression equation $y = a + bx$, where y is the washout in Bq and x the volume of irrigating water. Highest washout rates wre observed with ^{238}U (1.1 percent), lowest with ^{232}Th and ^{210}Po, and intermediate rates (0.02-0.06 percent) with ^{226}Ra and ^{210}Pb. Figures 1; tables 3; references 14: Russian.

Predicting Changes in Plant Cover in Area Affected by Reservoirs

937C0033A Moscow GIDROTEKHNICHESKOYE STROITELSTVO in Russian No 3, Mar 92 pp 8-12

[Article by P. G. Plyuta, candidate of agricultural sciences; UDC 551.482.4:577.4]

[Text] This paper reviews the results of the complex evaluation of the ecological conditions and plant cover at the hydraulic energy complex of the Tashliyk Hydroelectric Power Station. The advantages of this proposed phytoindication method include the accuracy, speed, and ease of obtaining results. The phytoindication scales used include the heat and light supply, moisture supply, and soil fertility. This method is accurate enough to detect even the slightest change in ecological conditions as a result of any factor. The results demonstrated that the river noticeably affects humidity in the floodplain ecosystems and the feet of the slopes adjacent to it. Based on the findings of this study, the following changes are predicted for the Aleksandrovskiy Reservoir: 1. swamp and meadow communities in the flood zone will disappear; 2. phytocenoses in the 10-40 m coastal zone will experience cardinal changes due to flooding, with the changes decreasing with distance from the shore; and 3. it is believed that there should not be any changes in the plant cover prompted by the reservoir on the slopes or peaks adjacent to the cover. In conclusion, the research data show that the use of this phytoindication method for predicting changes in the ecological conditions and plant cover under the influence of reservoirs is justified. This method produces reliable results that are more detailed than traditional methods and does so with minimal time and expense. Figures 2; references 12: Russian.

Search for New Parasite-Control Agents. Report 4. Study of Antimalarial Activity of N-(Haloidnaphthyloxy)-2-Hydroxy-3,5-Dihaloidbenzamides

937C0054A Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 3, May-Jun 91 [manuscript submitted 12 Jul 90] pp 36-37

[Article by F. S. Mikhaylitsyn, O. V. Fedorova, N. P. Kozyreva, M. N. Lebedeva, L. A. Bolotina, N. D. Lychko, F. R. Menlisheva, Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, USSR Ministry of Health; UDC 615.283.926.012.1.07]

[Abstract] The work here represents a continuation of a search for new parasite-control agent (MED. PARASITOL., 1991, No 2). Prompted by the report of a U.S. patent received by American researchers (Kurz et al., U.S. Patent 3966964, 1976) for thiosalicylanilides demonstrating antiprotozoa activity, the researchers here synthesized several N-(haloidnaphthyloxy)-2-hydroxy-3,5-dihaloidbenzamides for the purpose of testing their antihelminth properties. The compounds were studied experimentally on white mice in a malaria model induced by *Plasmodium berghei* (normally a drug-resistant strain). One of the compounds, administered in dosages of 500 mg/kg or 250 mg/kg, t.i.d., reduced the blood levels of plasmodium well below those produced by the control, chloroquine diphosphate. All the experimental animals died, but the compound did extend their lives beyond those of the untreated, control animals. The researchers conclude that further searches should be conducted among N-substituted 2-hydroxy-3,5-diiodine benzamides. Figures 1, references 6: 5 Russian, 1 Western.

Modification of Medium for Culturing and Isolating Lyme Disease Pathogen

937C0054B Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 3, May-Jun 91 pp 56-57

[Article by N. B. Gorelova, S. V. Shcherbakov, Scientific Research Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow; UDC 579.834.114.083.13]

[Abstract] The isolation and culturing of *B. burgdorferi*, the pathogen for Lyme disease, is usually done with BSK-11 medium prepared on the basis of CMRL-1066, which is not made in the USSR. That prompted the researchers here to assess the possibility of replacing CMRL-1066 with some accessible base. After testing several possible replacements—among them medium 199 on a Hanks solution, RPM1, and MEM—the researchers found medium 199 to produce the most satisfactory results, i.e., *B. burgdorferi* grew best on it, averaging 8 x 10^7 spirochetes per milliliter. In another stage of the research, involving the possibility of the use of medium 199 for primary isolation of the spirochetes from ticks, a total of five spirochete isolates were obtained from *I. persulcatus* and *I. ricinus* ticks. References 5: 4 Russian, 1 Western.

Producing Immunoenzyme Congugates of β-Lactamase From *Vasillus licheniformis* 749/c and Horse Radish Peroxidase With Human HIV-1 Antibodies

937C0015B Moscow ANTIBIOTIKI I KHIMIOTERAPIYA in Russian Vol 36 No 11, Nov 91 [manuscript submitted 10 Feb 91] pp 15-17

[Article by A. Yu. Sazykin, S. A. Yeremin, A. M. Yegorov, A. I. Starov, I. A. Sakayan, G. R. Matsevich, R. A. Gibadulin, Institute of Virology imeni D. I. Ivanovskiy, USSR Academy of Medical Sciences; Scientific Research Institute of Viral Preparations, USSR Academy of Medical Sciences, Moscow; UDC 615.373.03:616.98:578.828.6]-078.33]

[Abstract] A method is advanced for using carbodiimide bridging for the marker enzymes of β-lactamase and horse radish peroxidase to produce immunoenzyme conjugates for identifying the HIV-1 antigen, and the conjugates are compared with those produced by traditional methods of bridging, i.e., periodate and glutaraldehyde. The researchers regarded the development of a method for producing a conjugate stable in a lyophilized state with β-lactamase from *B. licheniformis* 749/c to be the most important result of the work. Two forms of carbodiimide were used in the research: 1-ethyl-3(3-dimethylaminopropyl) carbodoiimide (CD-1) and 1-cyclohexyl-3(2-morpholinoethyl) carbodiimide toluolsulfonate (CD-2). CD-1 had a higher titer in EIA that did those produced with the older bridging. Figures 1, references 6: 4 Russian, 2 Western.

Creation of Integrative Vectors for Actinomycetes-Producers of Antibiotics

937C0015A Moscow ANTIBIOTIKI I KHIMIOTERAPIYA in Russian Vol 36 No 11, Nov 91 [manuscript submitted 8 Feb 91] pp 3-5

[Article by A. Ye. Grigoryev, D. B. Zhukov, V. A. Orlova, V. N. Danilenko, All-Union Science Center for Antibiotics, International Laboratory for Genetic Engineering of Antibiotics Producers; UDC 615.332:577.182.36].012.6.07]

[Abstract] Owing to the fact that stabilizing genes cloned for the biosynthesis of antibiotics requires the creation of integrative vectors, including those with variable quantities of genome copies, the researchers here engineered variable-copy integrative vectors for actinomycetes on the basis of the amplified sequence of AUD-Sr1 *Streptomyces rimosus* and eSA1 of the genetic element of *Streptomyces antibioticus.* Step by step, the paper presents a theoretical substantiation of the possibility of creating such integrative vectors, describes the cloning of the fragment of the AUD-Sr1 sequence *S. rimosus* in the plasmid pSU 23 in *E. coli* on the pUC 19 vector, the plotting of the restriction map of the plasmid pSU 449, and the insertion of the BamHIB fragment of the eSA 1 sequence of *S. antibioticus* in the hybrid plasmid pSU 449. The researchers produced hybrid plasmids pSU 475 and pSU 476—vectors with a variable number of genome copies and potentially capable of integrating with chromosomes of the actinomycetes strains of *S. lividans, S. erythraeus, S. antibioticus,* and *S. rimosus.* Figures 3, references 5: 4 Russian, 1 Western.

Atropine Modification of Action of Acetylcholine on Calcium Current of Frog Atrium

937C0002D Moscow BIOLOGICHESKIYE MEMBRANY in Russian Vol 8 No 12, Dec 91 [manuscript submitted 2 Oct 90] pp 1281-1291

[Article by O. V. Nakipova, A. V. Lazarev, T. Sh. Kshutashvili, A. A. Povzun, V. A. Krupenin, All-Union Scientific Research Institute of Biotechnology, Ministry of Medical Industry, Moscow; UDC 577.352.465]

[Abstract] In studying the effect of atropine on acetycholine's influence on I_{Ca} in frog atrial cells, the researchers used the voltage clamp methods to show that atropine, a specific antagonist of muscarinic cholinoreceptors, increased I_{Ca} by 20-25 percent over control. They found that M-antagonists are capable of having a physiological effect that is the opposite of that produced by agonists. The effects of M-antagonists like atropine and scopolamine in modifying the subsequent action of acetylcholine are considerably greater when the test preparations are treated beforehand with a GTP analog, 5'-guanilylimidodiphosphate (Gpp[NH]p), and isoproterenol. In fact, that is a necessary condition for atropine to induce a reversal of acetylcholine's action. It is hypothesized that Gpp[NH]p, in extracellular application, may also amplify the transition of the receptors to the R_1 state. The researchers found that receptors in different conformational states can interact with various types of G-proteins and effector systems. Figures 7, references 57: 7 Russian, 50 Western.

Resolutions, Orders, Directions of Ukraine's Ministry of Health Protection

937C0089A Kiev FARMATSEVTYCHNYY ZHURNAL in Ukrainian No 4, Jul- Aug 92 pp 92-93

[Article by V. P. Sobolevskyy, Chief Inspector, Scientific Production Organization "Ukrfarmatsiya"]

[Excerpts] The Supreme Council of Ukraine resolved to introduce various changes and supplements to the Ukrainian SSR Law "On the status of social protection of citizens who suffered from the results of the Chernobyl catastrophe" and to enact it in its new version. We propose certain positions of this law concerning provisions of medications to individuals assigned to one of the categories of those suffering from the Chernobyl catastrophe. To establish benefits and compensations for those suffering from the Chernobyl accident, article 14 recognizes the following categories: First category—invalids from the group of workers involved in liquidation (clean-up) of the effect of the accident on the Chernobyl Nuclear Power Plant (NPP) and those suffering from the Chernobyl catastrophe for whom a causative relationship was established for their disability, those with radiation sickness resulting from the Chernobyl catastrophe and individuals whose disabilities are directly related to the effect of the Chernobyl catastrophe. Second category—members of the liquidation of the effects of the Chernobyl NPP accident who worked in the evacuation zone in 1986 regardless of the number of working days they have spent there, or those who in 1987 spent at least 10 working days there, as well as those suffering from the Chernobyl catastrophe among the relocated individuals in 1986 from the evacuation zone and individuals who continued to live in the categorical (obligatory) relocation zone from the moment of the accident for a period of at least five years. Third category—children whose radiation dose to the thyroid gland exceeds the level established by the Ukraine's Ministry of Health Protection, members of the liquidation of the effects of Chernobyl NPP accident who worked in the evacuation zone in 1987 from one to ten working days or in 1988-1990 for at least 14 calendar days, as well as those suffering from the Chernobyl catastrophe who work or have worked continuously or who live or have lived in the territory of the categorical (obligatory) and guaranteed voluntary resettlement area (not included in the second category). Fourth category—individuals who live continuously or who work continuously in the territory of intensified radio-ecologic control zone. In addition to individuals determined by these categories, the right to benefits established by this law extends also to individuals who worked temporarily in 1986 in the territory of categorical (obligatory) resettlement for at least 14 calendar days or in 1987—for at least a month, or those who lived in the territory of guaranteed voluntary resettlement during 1986-1987 for at least three months providing that they were sent into these zones on orders of the ministry, departments, or executive committees of the oblast councils of national deputies. Citizens who participated in liquidation of other nuclear accidents or tests or in the military training exercises using nuclear weapons belong to the first, second, or third category. The order of the establishment of these categories is determined by Ukraine's cabinet of ministers. The individuals assigned to categories 1, 2, 3, 4 and citizens who temporarily worked in the territory of a categorical (obligatory) resettlement zone or in the zone of guaranteed voluntary resettlement in 1986-1987 will be provided, along with other benefits, free medications based on doctors' prescriptions. Article 27 classifies the children who belong to the group of those suffering from the Chernobyl catastrophe. This category includes minor children that:

—were evacuated from the depopulation zone;

—live or have lived in the categorical (obligatory) resettlement zone;

—live or have lived in the zone of guaranteed voluntary resettlement;

—live or have lived at the moment of the accident or at least for three years in the zone of intensified radio-ecologic control;

—those born after 26 April 1986, one of whose parents participated in liquidation of the effects of the Chernobyl catastrophe, providing that these children could have suffered an indirect effect of radioactive irradiation as a result of the irradiation of one of the parents;

—those who received a radiation dose, to the thyroid gland as a result of the Chernobyl catastrophe, that exceeded the level established by Ukraine's Ministry of Health Protection, or whose illness was determined to be connected with the effects of the Chernobyl accident;

—those who lost one of their parents as a result of the Chernobyl catastrophe. In the section covering provisions for medications, the law provides for access to free drugs for the children and their parents. The costs connected with the implementation of this law will be recompensed by monies allocated to liquidation of the effects of Chernobyl catastrophe. [passage omitted]

Based on the decision of the Ukraine's cabinet of ministers dated 11 Jul 92, No. 389, directed at social protection of individual categories of the population, the following was enacted as of 1 July 1992:

—free release of medications, based on doctors' prescriptions, during ambulatory care of pensioners from the ranks of kolhosp workers and for other workers and employees on pensions because of their age, the status of an invalid and loss of bread-winners, based on minimal level (except for the individuals who receive a pension for children in case of a loss of bread-winner);

—release of drugs, with payment of 50 percent of their cost, based on doctors' prescriptions during ambulatory care of children aged three to six years. Expenses connected with delivery of these benefits listed during 1992 will be covered by general assignations for maintenance of medical institutions during the current year.

Proposed Reform in CIS Psychiatry

Effects of Reform Bill Controversial

927C0539A Moscow NEZAVISIMAYA GAZETA in Russian 19 May 92 p 6

[Article by Semen Gurvits, of the Independent Psychiatric Association, under the rubric "Position": "Yet Another Myth is Being Created To Torpedo the Law on Psychiatry"]

[Text] Not so long ago, psychiatrists were being reproached for their harshness and inhumaneness. Now they're being accused of disregarding the public safety: not resisting the pressure of the democracy-crazed press, relaxing control of patients and releasing them, letting them do what they want.

Candidate of Juridical Sciences Yu. Karpukhin and TRUD special correspondent T. Bystrova are warning their fellow citizens of the threat to their lives and health posed by 15 million mentally ill individuals ("potentially violent people and potential murderers") whose numbers, according to unnamed psychiatrists, will grow every year by 7-12 percent.

But after a careful study of the statistical reports and references, be assured that we don't have that number of patients and that there won't be such increments of growth. All the data in their article were exaggerated sevenfold or more. Those authors dumbfound the reader by saying that 70 percent of the psychiatric clinics under trusteeship have committed repeated dangerous acts by mixing up patients released by court decision from hospitals after mandatory treatment and patients released after treatment, quite often voluntary, on common grounds. It seems to me that a candidate of juridical sciences should not be making mistakes on such things.

And he should certainly know the section in the criminal code in which it is not just chronic psychiatric diseases that are listed as grounds for a person not being held responsible for his actions. For that reason, categorical judgments about the 10 percent of mentally ill from among those who have committed murder need some fundamental correction. Not to mention the not always unquestionable conclusions reached by special forensic psychiatry examinations on that. When the examinations are done again, it happens that those formerly "not responsible for their actions" are then taken to court as completely healthy people.

No one has abolished the regular monthly observation of patients who have committed acts dangerous to society and are under mandatory treatment. And no one has prevented the authors from explaining that in any psychiatric dispensary. There it can also be found out that that group of patients constitutes just 1 percent of all patients under the supervision of a psychiatrist. None of the rest have ever had a run-in with the law.

Right now, a bill prepared several years ago by a large group of specialists has been introduced in the Supreme Soviet of Russia on psychiatric care and the rights of citizens under care. The principle of voluntary care is fundamental to it, as it is in all civilized countries. A rather large of amount of space in the bill has also been devoted to the prevention of psychiatric patients from performing acts dangerous to society, as well as to the emergency response to be taken by the psychiatric service in the event that a person, as a result of a mental disorder, represents a direct threat to those around him.

But it is impossible to foresee everything. Especially accidents—physicians, who suffer more than anyone else at the hands of their patients, are aware of that. So should we be scaring readers with horrible stories and asserting, without proof, that we haven't come near to solving the problem of "protecting society from mental patients"?

Thousands of Psychiatric Beds Empty

927C0539B Moscow NEZAVISIMAYA GAZETA in Russian 19 May 92 p 6

[Article by Dmitriy Frolov, under the rubric "Expert Analysis": "Psychiatry Is Becoming Milder: Now 22,000 Beds for the Mentally Ill Are Empty Each Year"]

[Text] Stalin died—and the ZKs were given amnesty, and an endless wave swept over the country; the democrats got what they wanted—they began to release people from the psychiatric hospitals in droves, take people off the dispensary rolls, and now, every one of us is literally in danger of encountering a crazy man with a razor in his hand. It's not worth wasting words to refute such scenarios. And because of that, it makes sense, after abandoning all polemics, to take a look through the prism of statistics and the opinions of those who assemble those statistics at the changes that have come about in domestic psychiatry.

The first thing that might be of interest is, of course, how many patients there are who are suffering from some form of mental illness. According to the data of the USSR Ministry of Health, there were 5.3 million such people within its borders. They consisted only of people on the rolls in psychiatric-neurological dispensaries. It is abundantly clear that, for understandable reasons, people were forced to hide such illnesses, which means that far from everyone was seen by physicians. In addition, there exists a large group of so-called psychosomatic patients in whom the psychiatric nature of their illness is masked by some bodilt (somatic) disease manifestation like, say, eczema or a stomach ulcer. It would never even occur to most of them to see a psychiatrist. And perhaps that's not such a bad thing, because in the system of domestic psychiatry that existed until now, there was virtually no room for them.

As for bed space, that universal index of Soviet health care, the number of beds steadily increased and reached 185,000. In psychiatry, as everywhere else, a simple

principle was in effect: the more beds, the higher the status of the hospital and, consequently, the higher the wages of the administration. Just as important was (and still is) the "bed utilization," and because of that, by the time the accounting period came around, the chief physicians often asked the dispensaries to send as many patients as possible for hospitalization. The beds in some hospitals were even put in two tiers, and until 1986, virtually all the hospitals were overfilled. Today, however, our medicine is facing an unprecedented situation—over the year, something like 44 500-bed hospitals sit without patients.

"The changes with regard to hospitalization are undoubtedly connected to the changes in the public's opinion and to the introduction of new legal standards," says the director of the department of extrahospital care of the Moscow Scientific Research Institute of Psychiatry, Isaak Gurovich.

It's not a temporary phenomenon, and there's no reason to expect a return to the previous level of hospitalization. Despite that, however, the number of beds in Russia as a whole continues to increase, and that at a time when 50 percent of the psychiatric hospitals need major repairs. All of that requires a serious, well-thought-out change in the traditional approaches. And first of all, that could involve a partial reorganization of the hospitals and a requipping of the departments so that they are hostel/boarding houses for mentally ill individuals, whose stay in permanent facilities will be limited by the new law; it also involves the use of semipermanent facilities. And finally, it's time to abandon the statutes, instructions, and standards that existed with regard to categories of treatment facilities and to devote more attention to work done outside hospitals.

Until recently, the only form of extrahospital psychiatric care was the psychiatric dispensary. Referral there, as a rule, ended with placement on the rolls, with a mass of social constraints emanating out of that. Until that same 1986, the number of such patients grew, and then a reverse process began. Over a period of two years, a third of them were taken off the rolls in Moscow, which represented 1.2 million people for the whole country. According to the testimony of medical professionals, the reorganization of the system for the rolls notwithstanding the dangers did not have a negative effect on the initial identification of the patients. And there is no information on the growth of rights violations and acts dangerous to society by them. The conversations about the growing threat to society were generated by an entrenched negative stereotype, suspicion, and fear of the mentally ill. A special study conducted in the past, the results of which have been kept secret until now, showed that, strange as it may be, elderly women in one of the Central Asian republics have treated them with the most compassion. In general, however, the most widespread response has been aggression. There might not be such an effort to take advantage here of one of the categories of psychoanalysis and to regard that fact as a unique "reactive formation" when the subject is trying to develop qualities that conflict with his own tendencies. And correspondingly, a society whose "soul" is ill and whose awareness is distorted becomes very impatient with the mentally ill and those with faulty reasoning.

What concerns physicians is not so much the threat presented by their patients as much as the opposite—will their patients not be left unprotected in medical terms in the new environment? The probability of such a turn of events is examined by the deputy director of the Moscow Scientific Research Institute of Psychiatry, Valeriy Krasnov.

"Right now," he says, "the paternalistic medical approach to treatment that used to be inherent in our psychiatry is being replaced by a legalistic approach based on juridical acts. And if the physician used to be able to make the decision himself about whether treatment was needed—and that included compulsory treatment—now the patient has a legally supported opportunity to refuse the treatment, unless he presents a danger to himself or others around him. But if 'a danger to himself' is interpreted too narrowly—only as the possibility that he will bring bodily harm to himself—then that could lead to a refusal of treatment in certain patients who need it, but are not seeing the physician voluntarily. A similar problem exists in the United States, and research conducted in several large cities has shown that as many as 30 percent of street people fit that category of patient."

A great many questions arise in connection with the proposed transition to a system of insured medicine. Without a doubt, chronic patients make up most of our patients, and the percentage of disabled is extremely high—up to 25 percent. There are 600,000 of them in Russia. It's clear that not a single insurance company would be interested in them, and the situation with those people, who have been treated badly by fate, could become even more lamentable.

That circumstance, in all likelihood, could actually lay serious groundwork for massive violation of the rights of the mentally ill. Special attention to that could have been devoted by the creators of the law on psychiatric care, about which much had already been said and which took several years to make it to the light of day.

Scientific Analysis of Problems of the Biomedical Consequences of the Chernobyl Nuclear Power Plant Accident

937C0076A Kiev VRACHEBNOYE DELO in Russian No 7, Jul 92 pp 18-23

[Article by N. O. Artamonova, N. A. Busygina, T. A. Volkovaya and Ye. K. Kononenko, candidates of biological sciences, and V. I. Gubskiy, doctor of medical sciences, Kharkov Scientific Research Institute of Medical Radiology, Ukrainian Ministry of Health; UDC 001:616]

[Text] The Chernobyl Nuclear Power Plant accident attracted the attention of specialists in different fields of scientific knowledge throughout the entire world. Scientific information on certain issues concerned with the accident's biomedical consequences are widely encountered in scientific publications. Researchers make note of the high dispersal of articles among different information sources and of the increase in the flow of both foreign and domestic scientific documents on medical and social problems associated with the Chernobyl accident [7,13,31].

The authors of surveys emphasize that despite the great scientific potential and the financial and material resources being invested, we have not been able to achieve the desired effect in preserving the health of the population. Biomedical problems continue to be the most important. Among them is development of the ideology and the specific means and measures of protecting the population [11], which in turn requires optimization of information support to scientific developments.

To account for the numerous factors influencing the consequences of the Chernobyl accident, we need to employ the methods of systems analysis. The complexity of this approach is determined by the great number of influencing factors, of objects of influence, and of the types of reactions of these objects to the influence. Investigation of such a system requires creation of a dependable information base [14].

The illumination of the medical consequences of the Chernobyl accident contains inaccuracies and disagreements in the assessment of the situation by different scientists, public health organizers, and the public at large [3,17]. The mechanisms of influence of small doses of ionizing radiation upon human health have not been clarified; they are debatable, and they require their own further study [2,5,9,12].

The problems of chronic stress as a combination of radiation effects and the psychological and emotional consequences of the accident and of life in the affected areas are separated out as an independent scientific problem [1]. We would have to agree with [16] that the Chernobyl accident requires further comprehensive study and thought. However, special research directed at determining the trends in development of the problem as a whole and evaluating the foundation of scientific knowledge presently available has not been carried out.

Research conducted within the framework of the "Chernobyl Project" pursued the goal only of carrying out an expert evaluation of official and unofficial data from Soviet organizations, groups and individual specialists on biodosimetry and on the basic indicators of the health of the population in contaminated areas [17].

A study of the basic results of research on the medical consequences of the Chernobyl accident [27] was devoted to measures of medical and social support to victims by practical public health institutions.

The goal of this research is to analyze the data array established in the Kharkov Scientific Research Institute of Medical Radiology of the Ukrainian Ministry of Health, and to isolate the basic trends in the problem's development, which will make it possible to raise the effectiveness of using scientific information in the planning and fulfillment of scientific research. We systematized 282 domestic and 45 foreign works published in 1986-1991 and devoted to different issues of the biological consequences of the Chernobyl accident.

Analysis of the data array showed that collectives of scientific institutions of Russia, Ukraine, and Belorussia took part in research on the consequences of the Chernobyl accident. Preliminary analysis permitted us to distinguish more than 60 institutions involved in the study of the biomedical consequences of the Chernobyl accident. Of these, the following were classified as the leading institutions publishing the largest number of articles: the Scientific Research Institute of Radiation Medicine of the Belarusian Ministry of Health, the Radiobiology Institute of the Belarusian Academy of Sciences, the All-Union Scientific Center of Radiation Medicine, the Institute of Problems of Oncology and Radiobiology imeni R. Ye. Kavetskiy, the Kiev Scientific Research Institute of Oncology, and the Kharkov Scientific Research Institute of Medical Radiology.

The data array we analyzed contains the work of scientists of 18 foreign countries, including countries of Eastern Europe (Bulgaria, Hungary, Poland and Yugoslavia), Western Europe (Austria, Great Britain, Greece, Denmark, Italy, Norway, Finland, FRG, France and Sweden), and the United States, Australia, Syria and Japan. Such wide representation of author collectives of different countries attests to the global interest in the effect that the Chernobyl accident had upon living organisms, and in the remote consequences that may arise in different strata of the population in the future.

Analysis of the scientific directions in which research was conducted made it possible to systematize the information available to us and to present it in the form of an information model (Figure 1).

This information model consists of several levels: Level I reflects the quantity of publications on research on different body systems, levels II-VII reflect the quantity

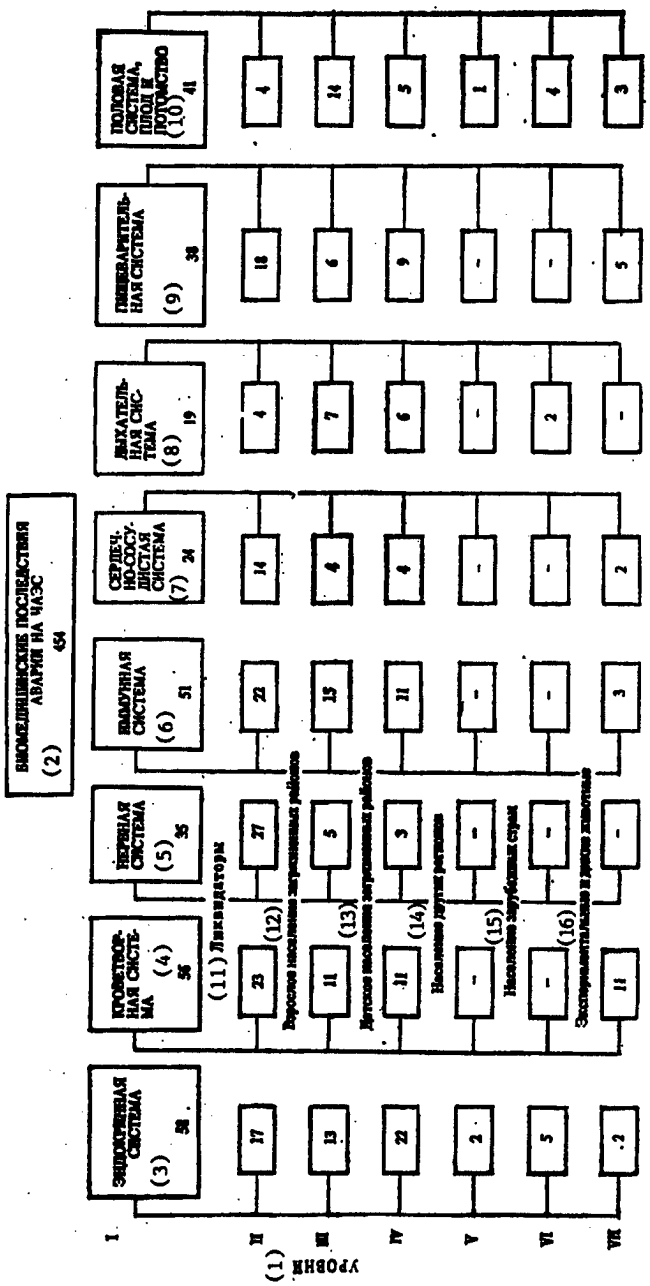

Figure 1. Information Model of the Distribution of Publications Concerning Biomedical Consequences of the Chernobyl Nuclear Power Plant Accident

Key:
1. Level
2. Biomedical Consequences of Chernobyl Accident
3. Endocrine System
4. Hemopoietic System
5. Nervous System
6. Immune System
7. Cardiovascular System
8. Respiratory System
9. Digestive System
10. Sexual System, Fetus and Progeny
11. Disaster control workers
12. Adult population of contaminated areas
13. Juvenile population of contaminated areas
14. Population of other regions
15. Population of foreign countries
16. Experimental and wild animals

of studies carried out on different objects of observation, for example, II—disaster control workers, III—adult population of contaminated areas, IV—juvenile population of contaminated areas, V—population of other regions, VI—population of foreign countries, VII—experimental and wild animals.

The data presented in the model show that researchers devoted their main attention to the health of three population groups—disaster control workers, and the adult and juvenile population of contaminated areas. The state of the nervous, endocrine and immune systems, the blood and blood-forming systems and metabolic functions were studied in the greatest detail in relation to these groups. A significant number of the studies are devoted to the problems of dosimetry as related to external and internal irradiation. It is hypothesized that at the level of standard doses, change occurred primarily and initially in regulatory mechanisms [18,26,28].

Nervous tissue is radioresistant. There is a great deal of evidence today, obtained as a result of research on complications following exposure to ionizing radiation, that the central nervous system possesses high radiosensitivity [19].

Different forms of penetrating radiation exert their influence, besides by direct effects upon the nervous system, through the system of analyzers—that is, by way of receptor endings. Ultimately, ionizing radiation evokes significant changes in all links of synaptic transmission. One of the possible mechanisms of these changes is disturbance of chemoreceptive substances, which can occur in response to ionizing radiation at a dose of as little as 10 rads.

Direct action upon the nervous system can bring about neuron destruction as a result of absorption of radiation energy [21]. Radiation myelopathy is usually a complication of radiation therapy of malignant tumors when a dose of 35-43 Grays is exceeded. Morphologically, radiation myelopathy manifests itself predominantly as focal or diffuse demyelination, going as far as coagulation necrosis [19].

Systematization of articles devoted to changes in the nervous system and analysis of their content made it possible to develop a hierarchical information model (Figure 2). The first level of the model reflects the number of studies in the principal research directions: integrated evaluation of body systems, and treatment. The scientific directions are broken down into further detail at the second and third levels.

Most studies are devoted to changes arising in the bodies of disaster control workers (31 out of 35 studies). Unfortunately the authors do not indicate the exposure dose in most cases. The bulk of the studies are descriptive in nature, presenting data from conventional clinical instrumental examination of different population groups. The novelty of such research lies in revelation and systematization of symptoms of neurological disorders in population groups subjected to external and internal irradiation within a wide range of doses.

It is impossible to detect neurotic symptoms in pure form, and so the discussion usually centers on psychosomatic disorders, which are distinguished by considerable lability [6,28,29].

The situation following the accident generated powerful psychosocial stresses based on radiophobic and other indirect influences (nosophobic, iatrogenic, nostalgic etc.). The situation that evolved was one in which the enormous volume of medical measures was inadequate to the demands of the situation, and the majority of the victims have been deprived of specialized psychoneurological care and psychological rehabilitation. Fundamental reorganization is required of both practical measures and scientific research [10,15].

Clinical instrumental analysis showed that vestibular dysfunction of varying degrees is observed in 70-79 percent of patients. The complaints of patients, which were accompanied by various vegetative disorders, were also confirmed by objective data [23].

The ESDVA automated diagnostic computer system was created for mass expert evaluation of the state of the vestibular apparatus, which made it possible to develop methodological recommendations on diagnosing vestibular disorders, to propose a classification and to determine the nature and degree of affliction of the vestibular apparatus by the methods of dosed and computerized nystagmography based on a trapezoidal program [4,20].

It should be noted that the brain research methods employed in practical public health (electroencephalography, echo-vasography, X-ray computer tomography) do not provide for determining the substrate of diagnosed diseases and their objectivization, which is fundamentally important to purposeful therapy and expert evaluation of the health of disaster control workers at Chernobyl [8].

Introduction of foreign accomplishments and further development of new integrated software-hardware packages will make it possible to evaluate neurological status and sensory systems of persons suffering the effects of ionizing radiation in a different range of doses more fully. Development of methods of comprehensive pathogenic treatment of neurological disorders is another problem awaiting its solution.

Hyper- and de-adaptation of the organism is a syndrome that manifests itself as stressing of the functional state of the basic regulatory adaptive and vitally important systems. These changes are determined at all levels, including molecular, membrane and cellular. General deregulation resulting from dysfunction of the nervous, cardiovascular, endocrine, immune, and other body systems is a phenomenon that attracts special attention [22,24,25].

We would have to agree with [30] that the functional state of patients should be considered not only as the outcome of acute radiation sickness but also as a complex of extreme influences, including psychological, typical of the given situation, to include the pattern of the disease itself.

Preliminary scientific analysis of publications on the integrated effect of the Chernobyl Nuclear Power Plant accident on the human nervous system indicates that while the authors illuminate the clinical pattern of arising pathology in their works, they do not always devote attention to the interrelationship between the changes that arise and the specific radiation influences, explaining all changes arising after exposure to ionizing radiation as the action of irradiation. The mechanism behind the influence of small radiation doses on the health of the individual, including on his nervous system, remains a debatable issue. According to data available to us, there are few studies devoted to developing pathogenic means of treatment.

Further study of nervous system changes requires a comprehensive approach that accounts for the dynamics of changes in health indicators and for development of justified prognoses of the further course of disease.

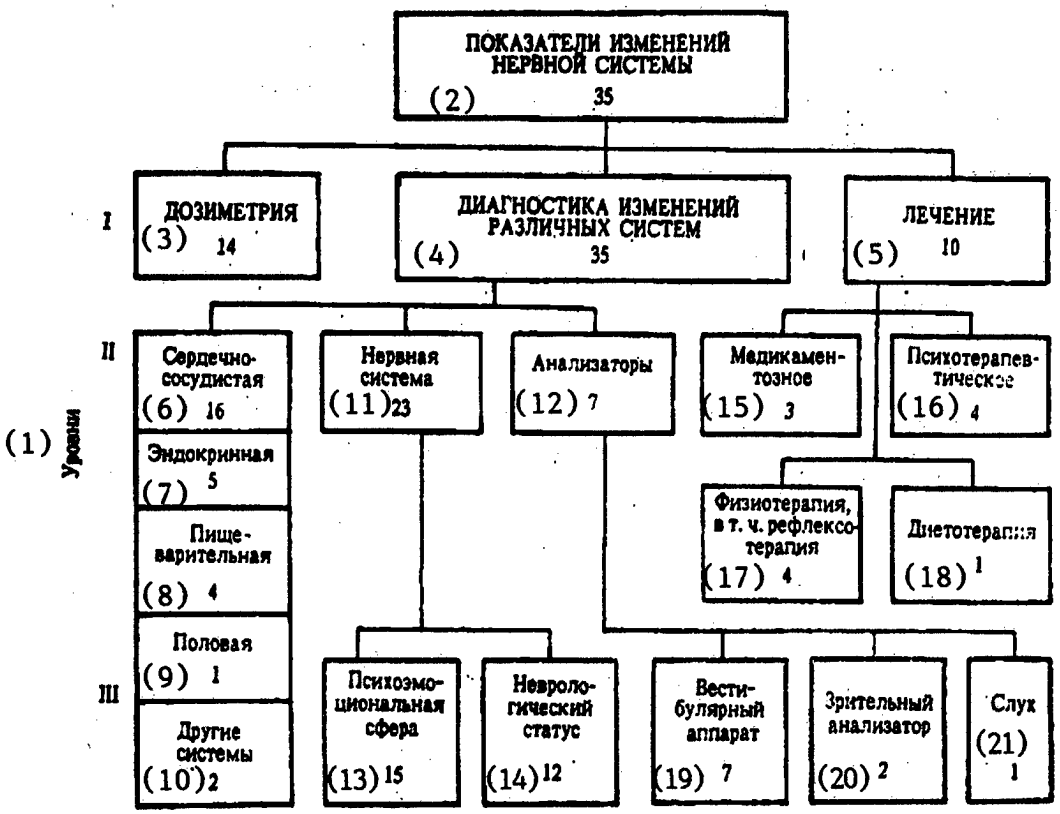

Figure 2. Information Model of the Distribution of Publications on Problems of Nervous System Research

Key:
1. Levels
2. Indicators of changes in the nervous system
3. Dosimetry
4. Diagnosis of changes in different systems
5. Treatment
6. Cardiovascular
7. Endocrine
8. Digestive
9. Sexual
10. Other systems
11. Nervous system
12. Analyzers
13. Psychological-emotional sphere
14. Neurological status
15. Medicinal
16. Psychotherapeutic
17. Physiotherapy, including reflexotherapy
18. Diet therapy
19. Vestibular apparatus
20. Visual analyzer
21. Hearing

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All-Union Conference on 'Plant Populations: Guidelines for Organization and Protection of the Environment,' Dedicated to the Memory of A. A. Uranov

937C0055A St. Petersburg BOTANICHESKIY ZHURNAL in Russian Vol 76 No 12, Dec 91 (manuscript received 18 Apr 91) pp 1802-1805

[Article by L. B. Zaugolnova, Moscow State Pedagogic University, under the rubric "Current Events"; UDC 061.3:581.5]

[Text] The regularly scheduled, fourth conference, dedicated to the memory of Professor A. A. Uranov (in connection with the 90th anniversary of his birth) convened in Yoshkar-Ola on 4-8 February 1991. It was organized by the Scientific Council on "Problems of Ecology and Anthropogenic Dynamics of Biological Systems," at the Mari State University (MarGU). In addition to MarGU, organizers of the conference included the Mari Branch of the VBO [All-Union Botanical Society], State Committee for Environmental Protection of the Mari Republic, and Moscow State Pedagogic University imeni V. I. Lenin.

The topics of the conference comprised theoretical research and practical developments called upon to serve the cause of protection, restoration and judicious use of plant life. The conference (in spite of various difficulties, both financial and political) turned out to be quite representative. It was attended by 90 people from 29 cities, from Estonia to Khabarovsk and from Arkhangelsk to Repetek and Tashauz. There were representatives of five academic and specialized institutes, six botanical gardens, 16 institutions of higher learning and four preserves. A total of 14 papers were delivered at plenary sessions.

The opening remarks were delivered by **V. P. Ivshin**, rector of MarGU. Then followed a paper on behalf of three authors, delivered by **L. A. Zhukova** (Yoshkar-Ola) who shed light on the main directions of development of the population conceptions of A. A. Uranov; she emphasized the need for further development of directions that were just recently formed on the basis of modern population ecology of plants, such as combining the genetic and demographic approaches, structural and material-energetic aspects of studying organisms and populations, research on spatial organization of populations, development of algorithmic models of populations, data bases and systems of experts. The paper of **Yu. A. Zlobin** and **V. M. Kokhanovskiy** (Sumy) dealt with the informative value of population analysis in its different aspects (including ontogenetic and dimensional heterogeneity). On the example of cultivated annuals, the authors demonstrated different variants of population reactions and methods of evaluating them as related to technology of growing them. **N. V. Glotov** (Leningrad) called attention to an integral conception of plant population as a natural entity, investigation of which requires the combination of genetic and demographic approaches. The speaker submitted some interesting material demonstrating microevolutionary processes in populations of white clover under the influence of soil pollution by petroleum products and as a result of impairment of ground cover. It should be noted that it is apparently for the first time at this conference that demographers and geneticists concerned with plant populations discussed scientific problems jointly. On behalf of a team of researchers (R. V. Popadyuk, T. O. Yanitskoy), **O. V. Smirnova** (Moscow) delivered a paper entitled "Means of Restoring the Structure of Populations in a Demutation Complex." This study was based on the conception of elementary demographic unit among plants, while demutation in forest communities was viewed as the process of its restoration in all types of trees, shrubs, and grass. Spatial and functional specifics of demutation of forest cenoses related to different prior exploitation of the territory and distinctions of species biology were demonstrated on the example of specific preserves. The conception being developed served as the basis for assessing the status and forecasting development of forest communities. The paper of **I. V. Tsarik** (Lvov), "Change in Structure and Dynamics of Carpathian Plant Populations Under the Influence of Anthropogenic Factors," dealt with the typology of population reactions to disruptive factors, as well as mechanisms providing for stable existence of species in the presence of anthropogenic disturbances. **O. I. Yevstigneyev** (Kanev Preserve) submitted some interesting material about the response to light and proper supply of water of various species of deciduous trees on the level of the organism as related to plant age. This author proposed a scale of photophilia, shade endurance, and range of productivity, which permits not only explaining processes of demutation in forests, but also to predict them. In a joint paper, **P. L. Gorchakovskiy** and **V. N. Zuyeva** (Sverdlovsk) shed light on questions of structure and dynamics of some rare plant species as related to the distinctions of their strategy: It was shown that the studied species of Astragalus exhibit the property of "eksplerentnost", and for this reason it is necessary to take specific (including mild regulatory factors) steps to protect these species. It is apparently high time for such an approach, since it has arisen independently in different studies dealing with rare species. In general, this aspect was covered in the paper of a team of authors (**L. B. Zaugolnova, L. V. Denisova, S. V. Nikitina**) (Moscow) who tried to carry out functional typology of rare plant species on the basis of ecobiological properties on the organism and population levels. The authors relate this typology to methods of protecting species-specific populations. The link between viable form of plants and strategy of species-specific populations of some grass species that alternate in the course of primary psammogenic successions in Karakumy was the subject of the paper of **G. T. Kandalova** (Repetek).

Three papers were delivered at the plenary session on 5 February. **A. A. Chistyakova** (Penza) dwelled on the mechanisms of recovery processes in forests as related to formation of different-sized windows and demonstrated

the link between microsuccession in processes and dimension of windows, as well as bioecological properties of plants, in her paper, "Mosaic Successions in Broad-Leaved Forests of European USSR." In this paper there was distinct reflection of the fact that disruption of spatial and demographic structure of populations could endanger the existence of species in a given territory. A team of authors (**M. M. Magomedmirzayev, M. D. Dibirov, A. D. Khabirov, O. A. Onishchenko**) (Makhachkala) delivered a paper entitled "Analysis of Modular Structure and Productivity of Perennial Legumes." In this paper, which was the result of multilevel experimentation to investigate the reactions of perennial plants to density and variants of habitat conditions, it was shown that there are both species-specific and varietal specifics to reactions on the level of different modules (structure and distribution of substances) and the organism (correlation between different types of modules). This aspect of investigation of naturally occurring and cultivated plant populations is necessary in order to select varietal material and predict development of plants used for different purposes. **N. I. Shorina** (Moscow) informed the audience about original materials that demonstrated the distinctions of population behavior of ferns, and she singled out four variants thereof, which are related to the differences in time and space distribution of sporophyte and gametophyte hemipopulations.

Three meetings dealt with section and demonstration papers (three sections were formed). The section on "functional organization of naturally occurring populations, and methods of population monitoring" was the best attended, and virtually all researchers who were scheduled to speak at the conference delivered papers contained in the agenda of this section (22 papers). The papers were extremely diversified in direction, and they reflected the following aspects of investigation of plant populations: genetic and phenotypic heterogeneity as related to demographic processes, distinctions of structure and dynamics of populations of mainly rare grass species against the background of anthropogenic factors and their adaptive significance, changes in physiological and biochemical processes in plant ontogenesis, methods of comprehensive evaluation of populations, distinctions of population biology of trees and their adaptation to conditions of phytocenosis and urban environment. We should like to note that problems of population demographics are of interest to geneticists, as well as physiologists and phytocenologists. At any rate, representatives of the syntaxonomic school (M. M. Cherosov, Yakutsk) received much support at the meeting when they called upon mutual exchange and enrichment of ideas and proposed that a school for plant demographics be organized for young people, similar to the one organized in Chernogolovka for floristic classification.

A series of papers dealing with the distinctions of plant reactions on the organism and population levels to various anthropogenic factors (recreation, change in ecotopic conditions, agroindustry, and environmental pollution), as well as effects of various ecological conditions on cenopopulations and forms of their adaptation to stressors (on the example of tundras and deserts), was delivered at meetings of the section on "mechanisms of effects of ecological and anthropogenic factors on plant populations." Adaptation of growth on the organism level and correlation between ontogenetic and vital structures on the population level were singled out as the main mechanisms. Collective papers (Pushchino, Moscow, Yoshkar-Ola): "Expert Systems for Ecological Evaluation Based on Analysis of Impaired Succession of Communities," and "Data Base on Geobotanical Descriptions," in which the authors informed conference participants about their conceptual approaches to these problems. In the recesses between meetings, participants had the opportunity to familiarize themselves directly with elements of these studies with the use of a computer.

The third section was devoted to population bases of succession dynamics and productivity of communities. Succession changes in forest communities (birch groves), meadow cenoses (under the effect of grazing and [hay] stacking), as well as in communities on technogenic substrates (gold dumps), based upon population mechanisms were discussed in one series of papers. A method of assessing extent of impairment of hay fields by means of indicator species was proposed in one paper. Work aimed at demonstrating links between development of populations of different species in a community and efforts to attribute the specifics of succession processes to distinctions in species population behavior merits attention and further development. Different methods of evaluating and predicting productivity of populations and individuals, and discussion of the link between productivity and structure of populations of perennial plants differing in life forms were discussed in another group of papers.

At the last plenary session, surveys were submitted by section chiefs, which also reflected the content of papers mailed to the organizing committee but not delivered at the conference due to absence of their authors. **L. B. Zaugolnova** informed the conference about fulfillment of a research project on subject 1.1.2: "Organization of Plant Populations as Related to Environmental Conditions and Anthropogenic Factors," noting that the main directions of this work were described at this conference. **A. S. Komarov** (Pushchino) dwelled in his paper on pressing problems of creating data bases and developing expert systems in population ecology, for the purpose of accumulating information and knowledge needed to solve both practical and theoretical problems. **I. P. Zeldi**, chief of Eco laboratory at MarGU, delivered an interesting and informative report that acquainted the participants with research pertaining to adaptive reactions of animals to chemical pollution of the atmosphere.

The following resolutions were adopted by conference participants.

1. To schedule the following: an All-Union conference on plant demographics in 1996 in Penza; a seminar on

"modular structure of plants, and productivity of populations" in 1991-1992 in Moscow; a course on plant demographics in Pushchino within the next three years; and a conference on "plant population data bases" in Pushchino in 1992-1993.

2. To request that the administrator of Section 1.1.2 of the All-Union program for basic research on "problems of ecology and anthropogenic dynamics of biological systems" form some working groups for investigations of the following problems: resistance and critical state of populations; determination of condition of populations and cenoses; development of population bases of succession dynamics of communities; development of the problem of modular organization of plants, morphological, and physiological bases of multiple variability of their development; combined use of genetic and demographic approaches for analysis of time and space organization of plant populations.

3. To create a data base containing information of specific researchers in the field of population biology of plants.

In conclusion, the conference ran an interesting business game, in which attendees participated with much enthusiasm.

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