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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 65

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 65

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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GDR

EVALUATION CRITERIA IN VESTIBULAR EXAMINATION OF FLIGHT PERSONNEL IN CIVIL AVIATION

Greifswald ZEITSCHRIFT FUR MILITARMEDIZIN in German Vol 17 No 5, Oct 76 signed to press 27 Mar 76 pp 253-255

SCHOEDER, H. J., M. D., KRESSIN, J., M.D., D.D.S., Medizinalrat, HOHENWALD, H., doctor of medical science; Medical Service of Transportation in the GDR, Management of Civil Aviation, Center for Transportation Medicine/Aviation

[Text] [German abstract provided by the source] The current methods used to examine the opto-vestibular system of pilots in civilian aviation are described and the range of normal values is presented. The Coriolis-cumulation test to determine individually variable vestibulo-vegetative stability can provide additional information. It can be introduced as a screening method. It can not, however, replace known clinical methods of examination. Figures 2; Tables 3; References 26: 5 East German, 1 Romanian, 1 Polish, 10 Russian, 9 Western.

USSR UDC 576.3/8:537.533.3:201

ULTRASTRUCTURE OF PROTEUS VULGARIS CELLS GROWN UNDER AEROBIC CONDITIONS IN ORBITAL FLIGHT

Kiev DOPOVIDI AKADEMII NAUK UKRAINSKOY RSR, Seriya B in Ukrainian No 12, 1976 signed to press 16 Jun 76 pp 1124-1127

KORDYUM, YE. L., POPOVA, A. F., UVAROVA, S. A., and NECHITAYLO, G. S., Institute of Botany, Academy of Sciences UkrSSR

[Text-English language abstract supplied by authors] Data are presented of a comparative electron-microscopic examination of Proteus vulgaris cells at a stationary stage of growth, on liquid nutrient medium (MBP), of experimental and control variants. The presence of distinct differences is established in the cell sizes, thickness of the membrane and ultrastructure organization of the cells grown under conditions of real space flight. Figure 1; References 15: 7 Russian, 8 Western.

USSR UDC 575.24:633.16

GENETIC CHARACTERISTICS OF THE INDUCED SEMIDWARF MUTANT VARIETY "FAKEL" OF SPRING BARLEY

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 19 Feb 76 pp 22-31

NETTEVICH, E. D., and TSUKANOV, A. F., Scientific Research Institute of Agriculture of the Central Regions of the Non-Chermozem Zones, Moscow Oblast

[Text-English language abstract supplied by authors] Genetic characteristics of the induced semidwarf variety "Fakel" of spring barley were studied at Moscow Plant-Breeding Center during the period from 1972 to 1975. It is established that the short-stem character in this mutant is controlled by one recessive gene, the expression of which depends on the inhibiting capacity of the corresponding dominant factor and also on the specifity of the interaction of the alleles determining the culmus length in different barley varieties. A good combining ability of this mutant as the initial material for breeding the spring barley for the resistance to lodging and for the productivity was established, as well as a high efficiency of the selection for short stem in different generations. Figure 1; Tables 6; References 14: 4 Russian, 10 Western.

USSR UDC 575.1:633.1

INHERITANCE OF RESISTANCE TO PUCCINIA STRIIFORMIS WEST IN TEN CULTIVARS OF COMMON WHEAT

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 1 Dec 76 pp 14-21

ANPILOGOVA, L. K., North Caucasus Scientific Research Institute of Phytopathology, Krasnodar

[Text-English language abstract supplied by author] Inheritance of the resistance to four biotypes of Puccinia striiformis West was studied in ten combinations of common wheat in F_1, F_2 and F_1BC_1 seedlings. Mono- and digenic characters of segregation in the hybrids was established. The cultivars Zagadka 44 and Nadiozhnaya 45 each carry one recessive gene of resistance to biotypes 20/67 and 20/92; the cultivars Moldova and Favorit each carry one recessive gene of resistance to the biotype 20/92; the cultivars Burgas 2, Chapingo 53 and Ring each carry two genes of the resistance to the biotypes 20/67, 20/92, 31/11 and 31/99; the cultivars P66 (No68) and IAS-20 each carry two genes of the resistance to biotypes 20/67, 20/92 and 31/99; the cultivar Kenya 117A carries two genes of the resistance to the biotype 20/67. Table 8; References 7: 2 Russian, 5 Western.

GDR

ELECTRONEUROGRAPHIC EXAMINATIONS MADE ON PERSONS EXPOSED TO PLANT PROTECTIVE USED IN AGRICULTURE

Leipzig, PSYCHIATRIE NEUROLOGIE UND MEDITSINISCHE PSYCHOLOGIE in German Vol 28 No 10, Oct 76 pp 630-634

ROEDER, Hans, and THIELE, Edith, Nerve Clinic and Department of Labor Hygiene, Greifswald University

[Text-English language abstract supplied by authors] Clinical and neurological as well as electromyographic examinations were made on twenty-five subjects working in agriculture and handling plant protection products. Measurements of the rate of nerve conduction were made on the peroneal and median nerves. The average rate of conduction of the peroneal nerve was found to be reduced in persons who had been exposed to plant protectives for more than three years. Electroneurography appears to be a useful method of recognizing polyneuropathic symptoms of chronic anc toxic affections caused by insecticides. Tables 2; References 19.

USSR UDC 576.321.35+356.5:633.117

CAUSES OF MOSAICISM OF SPOROGENOUS TISSUE WITH RESPECT TO CHROMOSOME NUMBERS IN MICROSPOROCYTES OF HEXAPLOID TRITICALE

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 1 Dec 75 pp 7-13

ORLOVA, I. N., All-Union Scientific Research Institute of Plant Growing imeni N. I. Vavilov, Leningrad

[Text-English language abstract supplied by author] Causes of mosaicism of sporogenous cells with respect to the chromosome number were investigated in six primary Triticale of different genome composition. It is established that the mechanism of the change of chromosome numbers in microsporocytes, i.e., the direct cause of mosaicism of sporogenous cells with respect to the chromosome number, are disturbances of the function of the mitotic apparatus observed at all the stages of archaesporial mitoses. Different types of disturbances cause substantially different changes of chromosome numbers in pollen mother cells (PMC). The lag of chromosomes at the prometaphase and anaphase lead to irregular reduction of the chromosome set in PMC by a comparatively small chromosome number. The immediate result of the splitting of the mitotic spindle is the formation of hypocells with small chromosome numbers. The main types of disturbances of archaesporial mitoses are characteristic of all the Triticale forms studied. Figures 3; Tables 3; References 10: 5 Russian, 5 Western.

USSR UDC 633.1.631.5.57

GAMETOCIDAL AND RETARDANT EFFECTS OF ETHREL ON WINTER WHEAT

Kiev TSITOLOGIYA I GENETIKA in Russian No 6, 1976 signed to press 14 May 76 pp 503-506

SAVCHENKO, N. I., LASTOVICH, A. S., and KARABANOV, YU. V., All-Union Scientific Research Sugar Beet Institute, Kiev

[Abstract] The effects of a single spraying of 0.1, 0.2, and 0.3% ethrel (2-chloroethylphosphonic acid) were studied in 6 winter wheat varieties. The extent of degeneration of the pollen grains was found to be dependent on the ethrel concentration and developmental stage of the plant. The 0.2% concentration applied in the early shooting stage, i.e., before or during meiosis in the maternal pollen cells, resulted in total pollen sterility and had a minimal retardant effect on the productive organs of all the wheat varieties studied. The relative humidity and other meteorological conditions must also be considered when determining the appropriate concentration to ensure maximum contact with the plants during spraying. Tables 2; References 6: 5 Russian, 1 Western.

USSR UDC 632.527:632.111.5

HARDINESS OF WINTER WHEAT HYBRID POPULATIONS IN RELATION TO THE PARENTAL FORMS

Kiev TSITOLOGIYA I GENETIKA in Russian No 6, 1976 signed to press 26 Apr 76 pp 507-510

ORLYUK, A. P., and BAZALIY, V. V., Institute of Irrigated Agriculture, Kherson

[Abstract] Study of the frost-resistance of a number of winter wheat hybrids determined by exposing the plants to temperatures varying from -- 19° to -- 23° C showed that hardiness is a character inherited from the parental forms. Stem length is a major factor. Biotypes with stems 100 to 120 cm long proved to be the hardiest. A negative correlation was found in most of the hybrid populations between hardiness and productivity (no more than 18% of the hybrids combined high yielding capacity and hardiness). The best results were obtained by intraspecific crossing of highly resistant varieties with productive short-stem forms, Soviet and foreign. Figure 1; Tables 2; References 7 (Russian).

USSR/Mexico UDC 633.491:631.524.86

RESISTANCE OF WILD POTATO SPECIES TO PHYTOPHTHORA INFECTION

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 4, Jul/Aug 76 p 35

VOROB'YEVA, Y. V., and GLINKA, YE. V., All-Union Scientific Research Institute of Phytopathology

[Abstract] The resistance of the following wild potato species to Phytophthora infestans A^1 and A^2 under conditions in Mexico was studied: S demissum (2n=72), S. andigenum (2n=48), S. pinnatisectum (2n=24), S. brachycarpum (2n=72), S. stoloniferum (2n=48), S. X semidemissum (2n=60), S. X edinense (2n=60) and S. X vallismexici (2n=36). Almost all wild potato species are highly polymorphic under conditions of some Mexican states (rainy weather from May to September and cold nights). Among clones of each species some are highly resistant to the above fungus and some are infected by it to great extent. For selection purposes it is advisable to select not only the resistant species but the resistant clones as well. This should be done when the disease is in a full progress and when it is possible to find many aggressive varieties of the fungus. Mexico is the preferred place for this purpose.

USSR UDC 632.633.256:[632.954 + 681.11

EFFECT OF HERBICIDES ON THE DYNAMICS OF CHEMICAL COMPOSITION AND CROP QUALITY OF BARLEY FERTILIZED WITH DIFFERENT AMOUNTS OF NUTRIENTS

Moscow IZVESTIYA TIMIRYAZEVSKOY SEL'SKOKHOZYAY STVENNOY AKADEMII in Russian
No 6, Nov/Dec 76 pp 135-144

GRUZDEV, L. G., MIRENKOV, YU. M., POSMITNAYA, L. V., SINYAGIN, YE. I. and GRUZDEV, G. S., Department of Plant Protective Agents

[Abstract] Effect of herbicides on the concentration of nitrogen, phosphorus and potassium in barley vegetative mass and on the quality of barley grain was studied as a function of NPK applied to the soil. The relative concentration of N, P_2O_5 and K_2O in the barley vegetative mass during all phases of growth decreased with increasing amount of fertilizers. The concentration of total nitrogen per dry mass during the tillering phase was 1.9% without fertilizers, 2.1% with a single dose of NPK and 2.6% with 2(NPK). This amounted to 1.25, 1.78 and 1.65%, respectively, during the booting phase; and to 0.3, 0.9 and 1.1%, respectively, during the milky ripeness. Herbicides (Banvel D, Tordon 101 and 22K, Dialen, 2.4-D) changed considerably the relative concentration of nitrogen in barley. 2.4-D and Banvel D decreased its concentration at the end of the tillering phase, Tordon 101 and Dialen increased it. Differences in the N concentration during different growth phases were less noticeable during the booting phase, and it was almost identical in all variants (without NPK, with NPK and 2(NPK) in barley straw during the milky ripeness. This indicates that herbicides influence metabolism in barley plants to some extent but do not change drastically the nitrogen metabolism and the reutilization of it by plants. On fertilized plots, the highest deviation in the concentration of N (from control) was observed during the booting phase. It decreased for all herbicides with the application of NPK, but in the case of 2(NPK) differences were observed only for Tordon 22K and 101. Similar changes during different growth phases of barley were also observed for P_2O_5. Without fertilizers, all herbicides decreased the relative and absolute concentration of P_2O_5 during the tillering phase. The dynamics of K_2O concentration in barley was influenced very little by herbicides. An accelerated reutilization of N, P_2O_5 and K_2O took place in barley plants after flowering and formation of grains. With increasing amount of available NPK, barley yielded higher crops but the concentration of total N, P_2O_5, K_2O, protein and starch in grains remained almost unchanged. Although the herbicides changes metabolism in barley to some extent, their detoxication in the vegetative mass did not lower the barley crop. Residual herbicides were not found either in straw, or in barley grain. Figures 4; Tables 3; References 27: 26 Russian, 1 Western.

USSR UDC 576.356.5

CYTOGENETIC STUDY OF THE NEW EI DERIVATIVE

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian Vol 29 No 9, Sep 76
signed to press 19 Jun 76 pp 95-96

MARTIROSYAN, S. N. and BAGDASARYAN, A. M., Yerevan State University

[Abstract] Mutagenic activity of the EI-9 derivative of EI during the first mitosis was studied in the meristem of Crepic capillaris. Air dry seeds of the plant were soaked in 0.001 M, 0.002 M, 0.0002 M and 0.0005 M EI-9 solution 2 hr before planting. Control seeds were soaked in distilled water. All seeds were fixed in a mixture of alcohol and glacial acetic acid (3:1). Experimental results showed that the EI-9, similarly as EI, induces chromosomal and chromatidal aberrations. It is assumed that the EI-9 derivative reacts with chromosoms in G_1 leading to actual breakage of the mitotic cycle in the S phase. The number of chromosomal aberrations increases with increasing concentration of the EI-9 derivative (during soaking of seeds). The highest concentration of EI-9 produces 15% of aberrations, as compared with only 3% of naturally occurring.

USSR UDC 633.11"321":631.527:631.67

SELECTION OF NEW VARIETIES OF SPRING WHEAT FOR IRRIGATED LANDS

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 3, May/Jun 76 pp 10-11

DEMORENKO, I. F., chief of selection section, Khakassk Agricultural Experimental Station

[Abstract] Sayanskaya 55 is the new spring wheat variety which was produced by hybridization, using Mongolian variety K-41422 and Albidum 73. The albidum variety was produced at the Khakassk Station and it is characterized by resistance to lodging, fast response to fertilizers and irrigation, ripens by 3-5 days earlier than Saratovskaya 29 (local variety around Krasnoyarsk) and it contains 2-4% more protein. Sayanskaya 55 yields 6-9 centners more grains on irrigated lands and 8-17%, on boghara. This variety is resistant to lodging, contains higher percentage of gluten and its flour is of high quality. In 1972 it yielded 44.5 centners/ha at Minusinsk seed-growing station, while Milturn and Saratovskaya 29 yielded only 26 and 28.5-29 centners/ha, respectively. Many other wheat varieties are mentioned with which the Khakassk Station works in its effort to select better wheat varieties by the hybridization method. Tables 2; no references.

USSR UDC 581.4+581.8 : 285.22

SUBMICROSCOPIC STRUCTURE OF PUCCINIA RECONDITA ROB. EX DESM. F. SP. TRITICI AND LEAF CELLS OF TRITICUM AESTIVUM

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 25 Feb 75 pp 257-261

REYTER, B. G., YUDKIN, L. YU., and YUDKINA, N. B., Siberian Scientific Research Institute of Agricultural Economics, Omsk

[Abstract] Ultrastructure of haustoria and intercellular mycelium of the causal agent of leaf rust is analogous to that recorded for other fungi. The reaction of the infected cells of the host 12 days after inoculation is characterized by well-developed endoplasmic reticulum and dictyosomes. Ultrastructural changes included: condensation of the chromatin of some nuclei, swelling and disintegration of the outer mitochondrial membrane, osmiophilic globules in the matrix and electron-dense material on the surface and in the space around the chloroplasts as well as swelling of the matrix and the formation of invaginations and pseudopod-like protrusions. The cytoplasm is significantly more clear and vacuolated. An accumulation of electron-dense material is observed in the hyaloplasm. The plasmalemma is sloughed off and plasmalemmasomes are formed. Some infected cells plasmolyze. The presence of structures identified as cytosegresomes or cytosomes, possibly, is associated with autophagy, but this question requires further research. References 30: 3 Russian, 1 Czech, 26 Western.

USSR UDC 631.847:632.4:633.511:582.288.42

EFFECTS OF UREA ON THE CAUSAL AGENT OF COTTON VERTICILLIUM WILT IN SOIL

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 11 Mar 76 pp 324-325

POPOV, V. I., STEPANOVA, M. YU., and KUMACHEVA, YE. M., All-Union Institute of Plant Protection, Leningrad

[Abstract] Five-liter ceramic pots of nonsterile field soil were inoculated with microsclerotia of Verticillium dahliae Kleb. race 1 (1000 infective units per g of soil. Several days later, urea (3 or 5 g dry product/kg soil) was added. Twenty to 30 plants were used in each treatment. Seeds were planted 2 mo later and results recorded periodically for 2.5-3 mo. Urea treatment at 3 g/kg soil reduced the number of wilted plants from 57.5 to 11.7% and at 5 g/kg to 9.4%. Control pots had over 1000 infective units/g, whereas only 260 and 130 infective units occurred at 3 and 5 g urea/kg soil, respectively. A variation of the experiment without cotton plants established that 5 g urea/kg soil could reduce viable infective units up to 30-fold in 30-60 days. In another study infected oats were added to pots (5 g/kg soil) followed by 5 g urea/kg soil or 1 g of microsclerotia were added/kg soil

followed by urea. The number of cotton plants infected by oat-borne fungus was reduced from 60 to 3.7% and when only microsclerotia were used reduction by urea was from 100 to 0% infection. When varieties 108-F or Tashkent-1 were planted in these same soils the subsequent year, 0-10% of the plants became infected in urea-treated soil and 40-95% became infected in nontreated soil. The mechanism of action of urea is unknown. Tables 2; References 10 (Russian).

USSR UDC 582.285.22.581.1

BIOLOGICAL CHARACTERISTICS OF PUCCINIA RECONDITA ROB. EX DESM. F. SP. TRITICI ON IRRIGATED LANDS

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 14 Jul 72 pp 322-323

NATAL'INA, O. B., and LEBEDEV, V. B., Kuban Agricultural Institute, Krasnodar; Saratov Agricultural Institute

[Abstract] The study was designed to answer questions of the biology of Puccinia recondita f. sp. tritici under irrigated conditions in Saratov Oblast. Experiments were performed in 1964 and 1966-70 and included winter wheat variety Lyutestsens-230 and spring soft wheat Saratov-36 as well as others unnamed. Weather conditions were excellent for development of the pathogen in all years of the study except 1969. It was established that irrigation favors development of yellow and stem rusts on wheat. Leaf rust (P. recondita) caused 70-100% infection in each year except 1969. Thalictrum minus, nevertheless, was not an intermediate host of the rust in any year. Agropyrum repens, strongly infected, did not transmit rust to wheat. Uredospores from A. repens averaged about 1.24 microm longer and 0.5 microm wider than those from wheat (22.23 x 21.93 microm). Large numbers of uredopustules with viable spores were found on lodged winter and spring wheats near irrigated plots and led to greater infection in irrigated than in dryland conditions. At the earing stage irrigated wheat had more viable uredospores than dryland wheat. Uredospores of leaf rust from plant remnants remained viable for 155-170 days under laboratory conditions. Stem teperature was 4-7 degrees lower and relative humidity 5-9% higher in irrigated fields than in nonirrigated. Also the number of days with dew and relative humidity of 98-100% were 1.5 and 2-5 times greater, respectively. Rust pustules appeared 7-10 days earlier and disease development was more intense. The uredial stage developed into the telial stage 5-14 days earlier on both spring and winter wheats and the latter stage was more intensively developed. In the case P. recondita, infection occurred on more plant parts. In irrigated fields the least number of airborne spores occurred during tillering and the most during ripening. At harvest time only isolated uredospores were found in the air. References 9 (Russian).

USSR

UDC 632.4:633.13:582.285.22

SPECIALIZATION OF PUCCINIA CORONATA CDA. F. SP. AVENAE FR. ET LED. IN THE UREDIAL STAGE

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 2 Jul 74 pp 308-311

PUGACHEVA, G. T., and SUZDAL'SKAYA, M. V., All-Union Scientific Research Institute of Phytopathology

[Abstract] Moscow, Kaliningrad and Georgian SSR source fungus samples were used to inoculate 163 host species of 57 genera during tillering or heading stages of growth. Sixty-three grass hosts were susceptible and 32 were mildly susceptible. A list of 91 known hosts of the fungus is given, and a list of additional hosts with mild susceptibility is included. Differences in reports of similar studies apparently stem from specific host differences in different parts of the country and from differences in populations of the fungus in different years. In the Soviet Union there is no information on racial composition of Puccinia coronata f. sp. avenae on grasses, thus, in additional studies selected species of wild grasses were inoculated with uredial populations of known races from individual sori from oats. A predominant number of physiological races on oats were also found on other grasses. Authors conclude that crown rust possesses a broad specialization on cultivated and wild grasses adapted for catching a large number of physiological races which infect oats. This provides evidence of the role of wild grasses in preserving, concentrating and distributing rust infection to seed oat crops. Tables 1; references 15: 13 Russian, 2 Western.

USSR

UDC 632.4 : 633.511 : 632.938

TESTING WITH RESISTANCE OF COTTON CULTIVARS IN THE LABORATORY

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 21 Jul 75 pp 289-293

VOYTENOK, F. V., and PYL'NOVA, T. A., Scientific Research Institute of Selection and Seed Production of Cotton, Tashkent

[Abstract] This work was conducted to determine the possibility of replacing the usual field testing of cotton for resistance to verticillium wilt with a laboratory method in which early (winter), large-scale testing is feasible. Races 1 and 2 of Verticillium dahliae and 16 susceptible and resistant varieties and strains of cotton (Gossypium barbadense) were utilized. Conidia from 10-day old Czapek agar cultures of V. dahliae (10^5, 10^6 or 10^7 conidia per ml water) were inoculated into the stem 1 cm below the flowering node under greenhouse conditions. Disease appearance and progression were noted. Manifestation of disease depended on the particular fungal race-host variety combination. The number of infected plants increased with increased inoculum level but disease severity was not proportional to the dosage. Sharper differentiation generally occurred with use of race 2. The method is of value to supplement field studies. Its success demands a correct and representative population selection of fungal races for the varieties of cotton being tested. Tables 3; references 8: 5 Russian, 3 Western.

USSR

UDC 612.014.43.611.814.1:547.233

CHANGE IN CONTENT OF BIOGENIC AMINES AND ACETYLCHOLINE IN RAT HYPOTHALAMUS UNDER EFFECT OF ELEVATED TEMPERATURE

Kiev DOPOVIDI AKADEMII NAUK UKRAINSKOY RSR, Seriya B in Ukrainian No 12, 1976 signed to press 3 Aug 76 pp 1114-1116

KORNYUSHENKO, N. P., Scientific Research Institute of Endocrinology, Kiev

[Text-English language abstract supplied by author] It is shown that after heating rats at 40°C for 90 min the content of dopamine and acetylcholine decreases and the content of gamma-amino butyric acid increases in their hypothalamus. The level of serotonin and noradrenaline in this case remains unchanged. Administration of exogenous prolactine 2 hours before heating does not affect the dopamin content and essentially normalizes the level of gamma-amino butyric acid and acetylcholine in the hypothalamus. Gamma-butyric acid and acetylcholine are likely to take part in regulating the lactotropic function of the adenohypophysis in rats. Table 1; references 6: 1 Russian, 1 Ukrainian, 4 Western.

USSR

MICROBIOLOGY AND THE NATIONAL ECONOMY

Vil'nyus SOVETSKAYA LITVA in Russian 3 Nov 76 p 2

[Article by Candidate of Biological Sciences, Senior Scientist at the All-Union Scientific Research Institute of Applied Enzymology V. Gribauskene]

[Abstract] The All-Union Scientific Research Institute of Applied Enzymology in Vil'nyus has been developing enzymic preparations since March 1975. Research conducted here has demonstrated that the addition of protosubtilin to carp ponds provided production of 80 rubles of additional income per hectare of reservoir. Analogous experiments with ducklings produced weight gains of 5 percent in 24 hours. Cellulose has been used successfully in production of silage as it splits the cellulose in straw.

Amylorosin is being used to improve the quality of bread and has produced an economic effect of 40,000 rubles per million tons of bread. Enzymic preparations of fungal and bacterial origin are used in the confectionery industry, in household chemistry and in the textile and tanning industries. In Vil'nyus, amylosubtilin is used to remove size from cotton thread. The All-Union Scientific Research Institute of the Tanning Industry is developing a technology of mold fungus production for production of highly active maltavamorin.

Proteolytic enzymes are being used in medicine. Plastic surgeons have used mixtures of protease in prophylaxis and therapy for many years. The use of terilizin (for therapy of thromboses and infarcts) esterase of cholesterol (for treatment of sclerosis), and asparaginase (for treatment of leukemias) is planned for the immediate future.

USSR UDC 577.156

STABILITY OF TERRILYTINE IMMOBILIZED BY KMT CATION EXCHANGE GEL

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 6, Nov/Dec 76 pp 886-889

TIMAKOVSKAYA, A. F., MIRGORODSKAYA, O. A., SELEZNEVA, A. A., MOSKVICHEV, B. V., and SAMSONOV, G. V., Leningrad Scientific Research Institute of Antibiotics

[Abstract] Denaturation of a native terrilytine (enzyme produced by Aspergillus terricola) and terrilytine modified by the carboxylic cation exchanger KMT mixed with a gel was studied. The inactivation rate of the native enzyme at pH 3 and pH 2.7 was $5.3 \cdot 10^{-3}$ sec^{-1} and $1.3 \cdot 10^{-2}$ sec^{-1}, respectively; the inactivation of the terrilytine incorporated into the KMT gel at the same pH was $9.4 \cdot 10^{-5}$ sec^{-1} and $1.7 \cdot 10^{-4}$ sec^{-1}, respectively. A low inactivation rate of the terrilytine mixed with the KMT gel can be attributed to a spatial fixation of the secondary macromolecule structure of the enzyme due to a multipoint interaction with polymetric matrix. Furthermore, the cation exchanger gel posses a high buffer capacity and prevents a fast diffusion of ions from external solutions. These factors facilitate a slow leveling of the hydrogen ion concentration in the gel and decrease the inactivation rate of the enzyme incorporated into the KMT gel. Figures 3; references 6: 4 Russian, 2 Western.

USSR UDC 612.111.7:615.849.19

QUANTITATIVE AND SOME FUNCTIONAL CHANGES IN BLOOD PLATELETS AFTER PULSED NEODYMIUM LASER RADIATION OF THE MEDULLA OBLONGATA AND MESENCEPHALON OF WHITE RATS

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, BIOLOGIYA, POCHVOVEDENIYE in Russian No 5, Sep/Oct 76 signed to press 22 Jul 75 pp 20-23

PASTOROVA, V. YE., and LYUBARSKAYA, I. I., Laboratory of Physiology and Biochemistry of Blood Coagulation, Biology Faculty, Moscow State University

[Abstract] The authors irradiated 180-200 g white rats with 1.06 nm wave length pulsed neodymium laser, 10 j per pulse, 3 pulses, 1.5 min between pulses. The laser radiation, which was not focussed, was applied to 1 sq cm of the head surface in the region of the mesencephalon and medulla oblongata from which hair had been removed. Blood samples were taken 5 min and 24 hrs after radiation. The number of platelets increased 40-50%, 5 min after radiation; there was also a rise in the level of platelet aggregation. After 24 hrs the difference in degree of aggregation between experimental and control animals was less pronounced. Study of the quantitative composition of the aggregates showed that, 5 min after radiation, the degree of aggregation rose due both to increase in number of platelets in the aggregates and to an increased number of aggregates; these differences were also less pronounced after 24 hrs. The authors attribute the increase in aggregation to hypercoagulation changes in the blood. Tables 3; references 5: 4 Russian, 1 Western.

USSR UDC 616.33-618.73-001.17-02:615.849.19

THE EFFECT OF LASER RADIATION ON THE GASTRIC MUCOSA AND ITS REGENERATION PECULIARITIES AFTER IRRADIATION

Moscow EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA in Russian No 6, Nov/Dec 76 pp 34-39

PANTSYREV, YU. M., KROKHIN, O. N., ORLOV, V. K., KRUZHILIN, YU. I., ZUBAREV, I. G., PROKHOROVA, I. A., KLYAVIN, YU. A., and POLIVODA, M. D., Second Moscow Medical Institute imeni N. I. Pirogov; Physics Institute imeni P. N. Lebedev Academy of Sciences USSR

[Text-English language abstract supplied by authors] Experimental investigations on 16 rabbits and 6 dogs showed that the effect of carbonate laser, working on a continuous program is mainly due to the thermic effect and produces in the gastric mucosa coagulation necrosis and circulatory disturbances; the latter may also be seen in the submucous layer. The degree of the above changes is directly dependent on the energy density of laser radiation. In lesions of the gastric wall limited to the mucous and the submucous layers, organization of the focus affected supervenes and the mucosa is restored according to the pyloric pattern, wherein the lesion affects the muscular layer proper and submucous layer regeneration takes place with scar formation. Figures 4; references 3 (Western).

USSR UDC 664.653.1:534.8

ACCELERATION OF THE DOUGH PREPARATION PROCESS BY ACOUSTIC WAVES

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 6, Nov/Dec 76 pp 914-921

RUSANOVA, T. V., DMITRIYEV, V. V., MACHIKHIN, S. A., and AUERMAN, L. Ya., Moscow Technological Institute of Food Industry

[Abstract] The effect of acoustic field generated by a low frequency hydrodynamic converter on the fermentation of barmy sponge and dough was studied. The acoustic treatment of the barmy sponge improves its raising power, intensifies the accumulation of acid flavors and increases its volume in a much shorter time. As a result the fermentation time is shortened on the average by 90 min and the quality of bread is better. Technological and microbiological results indicate that the effect of acoustic waves is proportional to a number of cells in the barmy sponge which can be dyed (N = 6 - 18%). The technological effect on the barmy sponge is always positive, provided the acoustic waves produce cavitations in the course of a single treatment. In general, it is possible to shorten the dough preparation time by 25-30% and to improve the bread quality, if optimal conditions for the acoustic wave generator are achieved. Figures 5; tables 2; references 9 (Russian).

USSR UDC 911.3:61

METABOLIC ASPECTS OF MAN'S ADAPTATION TO ARCTIC CONDITIONS

Moscow GEOGR. ASPEKTY EKOL. CHELOVEKA [Geographical Aspects of Human Ecology, Collection of Works] in Russian 1975 (1976) pp 200-210

PANIN, L. YE., BELOVA, O. V., OSTANINA, L. S., FILATOVA, T. G., TRET'YAKOVA, T. A., and POLYAKOV, L. M.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.29 by K. Murav'yeva]

[Text] Man's adaptation to Arctic conditions was evaluated from metabolic criteria characterizing carbohydrate and lipid metabolism. The data obtained on healthy young persons working in Noril'sk were compared with those obtained on a corresponding group of people living in Novosibirsk. Seasonal variations in the amount of sugar and pyruvic and lactic acids differ from the well-known norms and are especially pronounced during the first few months' residence in the Arctic. Seasonal changes in these parameters of carbohydrate metabolism are less marked in the inhabitants of Novosibirsk. Seasonal variations in total lipids and free fatty acids are very great, particularly at the start of the adaptation period and are opposite those in the inhabitants of Novosibirsk. A seasonal rhythm in the total lipoprotein fraction of low and very low density occurs only during the first 2 months. The lipoprotein fraction increases the longer an individual remains in the North. Serum cholesterol levels do not exhibit seasonal variations. The concentration of 11-hydroxycorticosteroids in those living in the Arctic is higher than in the people of Novosibirsk, and it does not exhibit seasonal variations. Nor are there marked seasonal variations in the serum vitamin C level, which is lower in the Arctic residents than in the people of Novosibirsk. The increase in 11-hydroxycorticosteroids in Arctic residents is one of the causes of the intensification of lipid metabolism. The deficiency of water-soluble vitamins partly inhibits carbohydrate metabolism. The vitamin deficiency is due to impairment of vitamin absorption resulting from poor nutrition of the newcomers. The replacement of the "carbohydrate" type of energy metabolism with the "fat" type is conducive to the development of ischemic heart disease. 23 to 24% of the inhabitants of Noril'sk were found to be suffering from this disease. Maladaptation changes are particularly pronounced in persons who come to the Arctic during the polar night. Bibl. 26 references. [Institute of Clinical and Experimental Medicine, Siberian Branch, Academy of Medical Sciences USSR].

USSR UDC 551.583.14

PRINCIPLES OF MOISTURE CYCLE CHANGES

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 35-44

BUDYKO, M. I., and DROZDOV, O. A., State Hydrological Institute

[Abstract] Major works of the USA and Soviet hydrologists on hydrology problems are reviewed. The temperature and motion of the air are the two basic factors influencing the hydrologic cycle. The long-term precipitation pattern is attributed mostly to changes in the interlatitude temperature gradient which in turn predermines the hydrologic cycle. When the interlatitude temperature gradient changes, the circulation intensity of the oceanic moisture to continents also changes. A decrease in the interlatitude temperature gradient during most of the year reduces the flow of the moist air from oceans to continents, and a drop in precipitations on continents follows. A reverse picture takes place when the interlatitude temperature gradient increases. This was proved to be true for all seasons except the summer when this correlation disappears. During the summer, the amount of precipitations depends on regional temperature gradients, and precipitations during this period are due not so much to the oceanic moisture but to the moisture moving from southern regions. However, the pattern of precipitations in summer over long periods (30, 50, 100 years) obeys the same general rule. An overall picture of precipitations during warm and cold seasons at high latitudes is much more complex. In regions with insufficient air moisture content, the amount of precipitations increases with a decreasing Arctic temperature. This is attributed to an accelerated moisture circulation over continents when the temperature difference between low and high latitudes increases and when the winter monsoonic activities over continents are low. It can be assumed that the subtropic regions with high air pressure are displaced toward lower latitudes when the interlatitude temperature gradient increases. Thus, the hydrologic cycle is closely related to factors that produce climatic changes. Figures 4; references 15: 10 Russian, 5 Western.

USSR UDC 551.48:551.57:581.5:626.80

ANALYSIS OF THE TOTAL SOIL MOISTURE EVAPORATION AND EFFECTIVENESS OF CONTROL METHODS

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 83-98

BUDAGOVSKIY, A. I., and SHUMOVA, N. A., Institute of Water Problems, Academy of Sciences USSR

[Abstract] The aim of this work is to determine the total soil moisture evaporation during vegetation periods in regions subjected to severe droughts. Several (16) formulas are suggested for computing the rate of moisture evaporation for different soils. These formulas are based on the total transpiration of water by plants, the soil moisture evaporation, evaporation from the

moist soil surface, air humidity, thermal soil radiation, heat transfer in soils, the relative area of plant leaves, the thickness of the upper dry soil layer, diffusion of water vapors in a dry soil layer, heat conductivity by the soil dry layer, air temperature and other factors. The total soil moisture evaporation consists primarily of transpiration and evaporation directly from the soil under vegetation cover. The overall picture of the total soil moisture evaporation includes the relationship between evaporation components, their daily variations, as well as variations during warm periods, including the interannual variability. Therefore, not only the actual observations of the soil moisture evaporation shall be taken into account, but theoretical approaches as well. The analysis method is based on a quantitative modeling of the total evaporation and of its components. An early spring entrapment of snow waters and the use of the surface active agents to conserve the soil moisture and to lower the rate of evaporation are also considered. Figures 6; tables 3; references 10 (Russian).

USSR UDC 628.33

FILTERING OF INDUSTRIAL AND RESIDENTIAL WASTE WATERS WITH FILTERING FLOATING CHARGE

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 185-191

ZHURBA, M. G., and PRIKHOD'KO, V. P., Ukrainian Institute of Water Husbandry Engineers

[Abstract] The suggested filtering floating charge consists of crushed and granulated polystyrene. The floating charge is highly effective for the removal of suspended fibers, undissolved chemicals and suspended solid particles. The polystyrene filters can be used for industrial and sewage waters during their final filtering stages before being released into lakes and rivers. Best results are obtained when small polystyrene granules (0.4 - 0.8 mm in diam.) are used at the bottom of the filtering column and large granules (up to 4 mm in diam) at the top of it. The polystyrene filters remove 80-87% of suspended matter, 60-80% of sulfides, and 40-80% of chromium from tannery water, provided it was preliminarily subjected to electrochemical and electrocoogulation treatment. Up to 90-96% of suspended fibers and up to 50% of iron is removed from industrial waters used in the manufacture of synthetic furs. Depending on the water pollution, the speed of filtration can vary from 5 to 10 m/hr for a filtering column 80-100 cm tall. Up to 98-99% of suspended matter is removed from some industrial waste waters by polystyrene filters, when the sand filters can not be used at all. The polystyrene filters have already passed the laboratory tests and pilot plants are installed at several industrial complexes. Figures 4; tables 3; references 6 (Russian).

USSR UDC 621.6.01

APPROXIMATE DETERMINATION OF WATER POLLUTION WITH GASES DISCHARGED FROM HYDROELECTRIC POWER PLANT

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 191-193

KUTYRIN, I. M., Institute of Water Problems of the Academy of Sciences USSR

[Abstract] The approximate method is based on the Henry law, according to which the solubility of gases in liquids is proportional to a partial pressure. With a partial pressure and tabulated data on the solubility of gases in water, the concentration of a given gas dissolved in water is found. In cases under consideration, SO_2 and NO are considered. At first the max. concentration of pollutants evolving from the power plant stack is determined. The concentration of a gas in 100 g of water at 20°C is determined from the formula

$$C' = C'' P/760$$

where C'' is the gas concentration in 100 g of water at 760 mm Hg at 20°C; P is the gas partial pressure in mm Hg; C' is the concentration of a gas in 100 g of water (in ml.) at a distance of X_M from the gas discharge source. References 5 (Russian).

USSR UDC 628.33

OPERATION OPTIMIZATION OF INSTALLATIONS PURIFYING THE CITY WASTE WATERS

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 193-198

BELICHENKO, YU. P., VOLKOV, L. S., and SIPACHEVA, M. A., Ministry of Water Resources of the USSR; Chelyabinsk Filial of All-Union Scientific Research Institute of Water Supply, Sewer Systems, Hydraulic Engineering Structures, and Engineering Hydrogeology; Chelyabinsk Polytechnical Institute

[Abstract] An attempt is made to determine the max. duration of settling in the secondary settling tanks and the final filtration rate of waste waters, with the use of dynamic computer programming. Computations were performed for installations yielding 100,000 m^3 purified water per 24 hr. The performance of the secondary settling tanks was based on a complete biological purification of waste waters in aeration tanks. After the aeration, the water biochemical oxygen demand (BPK_5) amounted to 5, 10, 15 and 20 mg/liter and it contained 2.0, 2.8 and 3.5 mg of suspended matter per liter of water. The optimal purification condition which justifies the cost of installations for waste waters with BPK_5 = 15 mg/liter is: settling in the secondary taks for 100 min and the final filtering with the rate of 6 m/hr. The water purified by this approach contained 2 mg of the suspended matter per liter of water. However, the size of installations and their cost vary, depending on the quality of waste waters. Results obtained in this work indicate that the optimal purification conditions should be programmed in each individual case. Figures 2; references 12 (Russian).

USSR UDC 551.519

HORIZONTAL CIRCULATION OF THE ATMOSPHERIC MOISTURE OVER THE USSR TERRITORY

Moscow VODNYYE RESURSY in Russian No 6, 1976 pp 56-65

KUZNETSOVA, L. P., Institute of Water Problems, Academy of Sciences USSR

[Abstract] Results presented in this work are based on daily observations at 150 meteorological stations located on the USSR territory and in surrounding countries. The study cover 1970-1975. The moisture circulation was investigated in a 9 km atmosphere layer which was divided into 7-12 sublayers according to altitude. Daily aerological observations at 73 stations in the USSR, as well as the average moisture circulation at different altitudes over 94 locations in the USSR and 32 foreign countries were used for the compilations of charts. The horizontal moisture circulation is represented by the atmosphere circulation intensity and the resulting moisture flows. There are zonal (F_x) and meridional (F_y) moisture flows, as well as positive (western and southern directions) and negative (eastern and northern directions). Figure 1 presents the average annual circulation intensity of the atmospheric moisture over the USSR territory. The average intensity ratio of the meridional and regional moisture distribution for the USSR as a whole is 0.8 - 0.9. The meridional moisture circulation amounts to 40% of the total. It increases toward the north, especially toward the north-west and north-east. The F_y/F_x for these regions is 0.95 - 1.05 and it reaches 1.25 for some regions. The Atlantic Ocean is the primary source of the moisture for the USSR. At 30° of eastern longitude between 70° and 45° of northern latitude the flow of moisture from the Atlantic Ocean is distributed as follows:

Total volume of the incoming moisture $\|G\|$, km^3	9600-9800
Meridional moisture circulation $\|G\|$, km^3	6500-6700
Regional circulation $\|G_x\|$, km^3	7000
$\|G_y\| / \|G_x\|$, %	93-96
Western circulation, G_{x+}, km^3	6350
Eastern circulation, G_{x-}, km^3	650
G_{x-} / G_{x+}, %	10
G_{y-} / G_{y+}, %	93
Regional resulting flow (western), G_x, km^3	5700
$G_x / \|G\|$, %	58-60

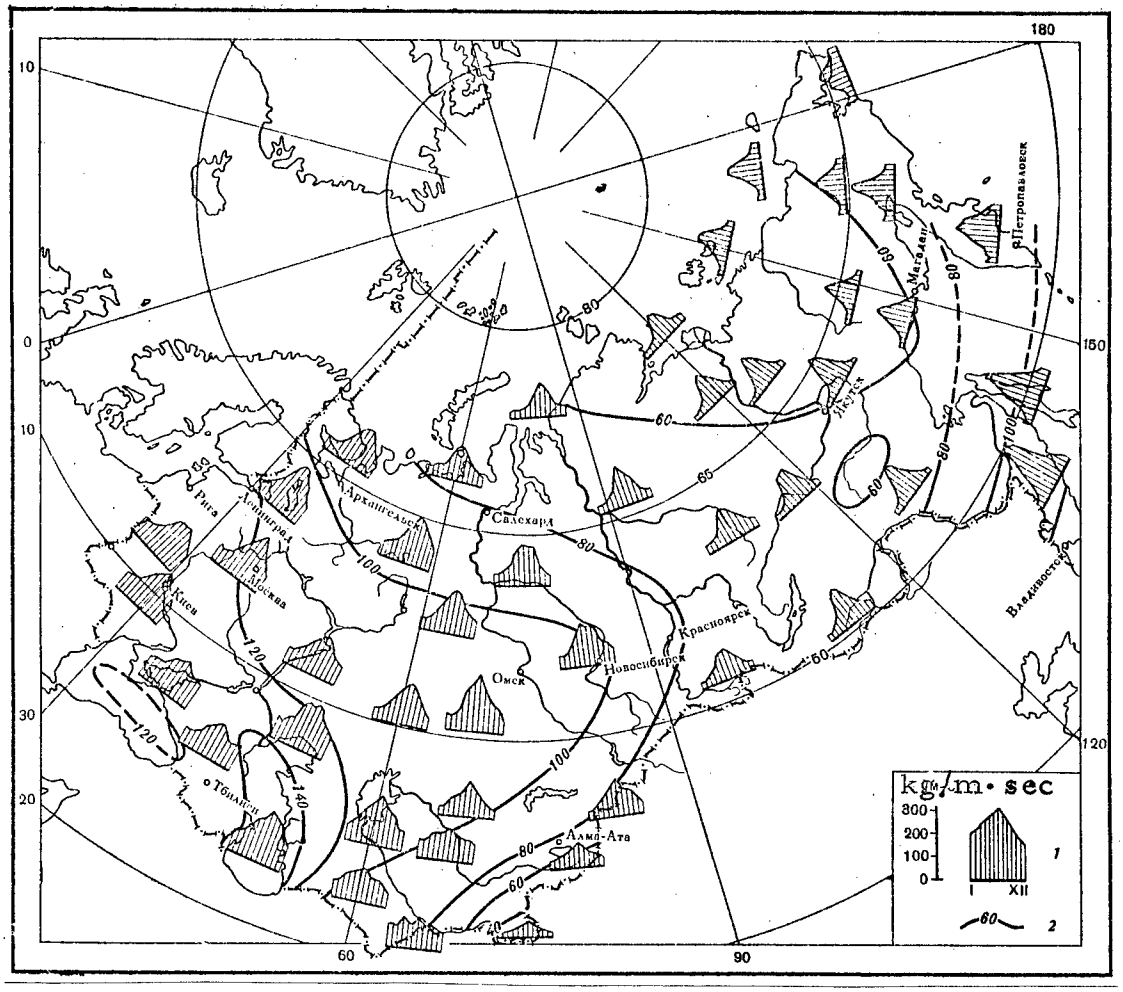

Figure 1. Moisture circulation intensity in atmosphere:
1 - monthly moisture circulation intensity, kg/m·sec
2 - annual average atmospheric moisture circulation, kg/m·sec

This means that approximately 12,000 km^3 of moist air flows from the Atlantic Ocean over the USSR territory; of this amount, about 6,000 km^3 flows over continental USSR. The resulting moisture is distributed as follows: 5700, 4900, 4300, 2600 and 2800 km^3 at 30, 60, 90, 120 and 155° of eastern longitude (meridional).

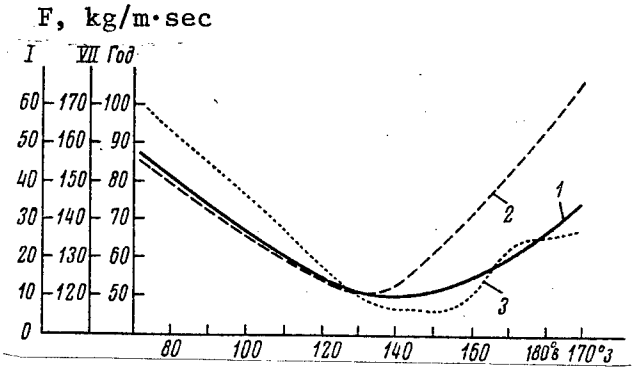

Figure 2. Changes in the moisture circulation in west-eastern direction between 65 - 67° of northern latitude

1 - annual; 2 - January; 3 - July

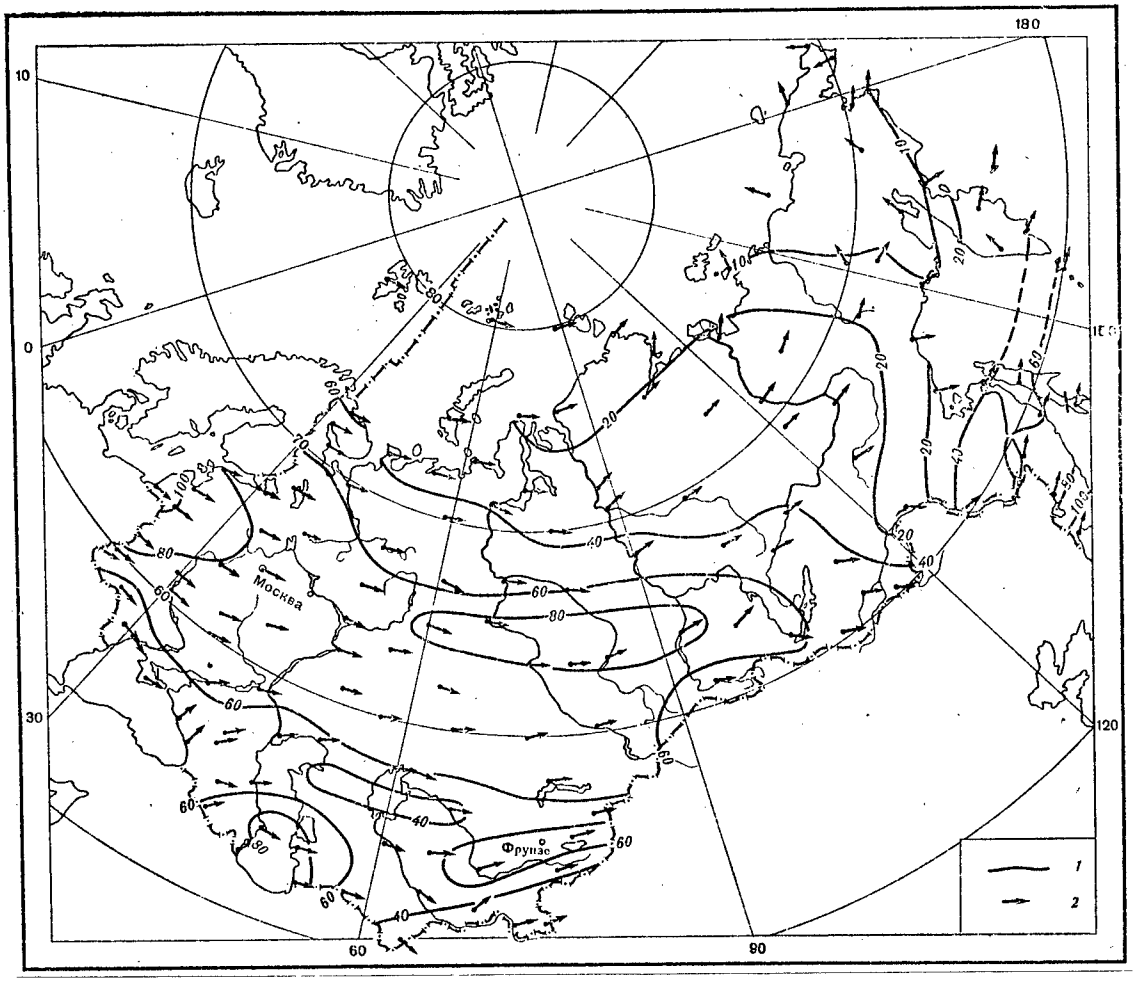

Figure 3. Resulting atmospheric moisture flows (annual)
1 - isolines of resulting flows, kg/m·sec;
2 - direction of flow.

BULGARIA

EPIDEMIOLOGICAL STUDY ON THE INFLUENCE OF ATMOSPHERIC CONTAMINATION ON THE HEALTH OF THE POPULATION IN THE DISTRICT OF THE INDUSTRIAL PLANT "MARIZA-EAST"

Sofia KHIGIYENA I ZDRAVEOPAZVANE in Bulgarian Vol 19 No 5, 1976 signed to press Mar 76 pp 446-454

TABAKOVA, S., Hygiene Center, Medical Academy, Sofia

[Text-English language abstract supplied by author] The author found on the basis of an inquiry statistical study on the morbidity of the population and on the state of patients, suffering from asthma in an inhabited place in the district of the industrial plant "Mariza-east" together with recordings of air contamination with dust and sulfur dioxide and of meteorological parameters: 1. Presence of significant correlation relationship between the degree of air contamination with sulfur dioxide and daily morbidity of persons over 60 years of age as well as the concentration of sulfur dioxide and number, frequency and duration of attacks of asthma in the patients. 2. Lack of statistically significant correlation between the dust concentration in air and the state of the observed groups of persons. 3. An increase of total annual morbidity of the population in the observed inhabited place, mostly manifested by diseases of respiratory, cardio-vascular system, skin and open mocous membranes. Figure 1; tables 6; references 10 (Western).

CZECHOSLOVAKIA

FIRST CASE OF LEPTOSPIROSIS CAUSED BY SEROTYPE FROM THE SEROGROUP AUTUMNALIS IN CZECHOSLOVAKIA

Prague CESKOSLOVENSKA EPIDEMIOLOGIE MIKROBIOLOGIE IMUNOLOGIE in Czech Vol 25 No 5, Sep 76 signed to press 20 May 75 pp 269-273

SEBEK, Z., ODEHNAL, P., National Reference Laboratory for Leptospirosis, District Station of Hygiene, Jihlava, Department of Infectious Diseases, Nove Mesto na Morave, District Institute of Public Health, Zdar nad Sazavou

[Abstract] A patient living at Zdar was working with imported metal scrap when he became a victim of human leptospirosis caused by serotype of the serogroup Autumnalis; he was committed to the Nove Mesto na Morave hospital, where his disease was identified. From the clinical aspect the affection was of medium severity, with a characteristic bi-phasic course of fever, exhaustion, confusion, gastrointestinal difficulties, light liver damage accompanied by jaundice, and transient glomerulonephritis. After administration of antibiotics and adjuvant and symptomatic therapy, the condition of the patient improved rapidly. Repeated serological examinations showed an increase in the level of antibodies from a negative level to a titre of 1 : 6,400 with L. erinacei-auriti during the 8th week of the disease. Results

of serological examinations with 13 types of sera from the group Autumnalis, and results obtained by adsorbed sera indicated that the disease was caused by the serotype erinacei-auriti. Serological examinations of human and animal sera, and cultivation examination of reservoir animals indicate that the infection was of a foreign origin. References 15: 5 Czech, 3 East German, 2 Bulgarian, 1 Russian, 4 Western.

CZECHOSLOVAKIA

INVESTIGATION OF BLOOD-SUCKING HIPPERA WITH SPECIAL EMPHASIS ON MOSQUITOES AS VECTORS OF ARBOVIRUSES IN CZECHOSLOVAKIA

Prague CESKOSLOVENSKA EPIDEMIOLOGIE MIKROBIOLOGIE IMUNOLOGIE in Czech Vol 25 No 5, Sep 76 pp 313-319 manuscript received 31 Mar 75

MINAR, J., Parasitological Institute, Czechoslovak Academy of Sciences, Prague

[Abstract] An investigation of blood-sucking double-winged insects living in Czechoslovakia is described. Mosquitoes (Culicidae), gad flies (Tabanidae), hiping midges (Ceratopogonidae) and Simuliidae were studied from the aspect of their importance in causing diseases. Mosquitoes are the main factor in transmission of arborviruses. New types of viruses (Tahyna and Calovo) were isolated from mosquitoes in Southwest Slovakia. Virus Yaba 1 was isolated from mosquitoes Culex modestus in Southern Moravia. This is the first time that this Central African virus was found in Europe. Even malaria may be transmitted by mosquitoes in areas where there are many vector insects. A review of literature covering this subject is presented. References 126 (Czech).

USSR UDC 616.936-036.22+616.936-084.4)(470)

ASSESSMENT OF RSFSR REGIONS FOR DEGREE OF HAZARD OF RENEWED TRANSMISSION OF MALARIA AND PROPHYLACTIC MEASURES

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 45 No 6, Nov/Dec 76 signed to press 2 Jul 75 pp 672-676

SPUDIS, V. K., Rostov Scientific Research Institute of Medical Parasitology, Ministry of Health RSFSR

[Text-English language abstract supplied by author] Three indices are suggested for the determination of the possibility of malaria transmission restoration in the RSFSR regions upon introduction of a source of infection: malaria prevalence in the past, importation of a source at present, and the temperature regimen in the summer season. A positive correlation was established by determination of the correlation coefficient between the average number of days with the air temperature above +15.1°C and the incidence of malaria in years of its mass prevalence. In the RSFSR, 3 groups of administrative territories may be distinguished: in the first group with up to 70 days with the temperature above 15.1°C the restoration of malaria transmission is little likely; in the second (from 71 to 100 days) it is possible upon importation of the source of infection, and in the third (101 days or more) the conditions for the restoration of malaria transmission are most favorable. The main prophylactic measure is the detection of the source of infection, and in the second and particularly in the third group vector control is necessary. Table 1; references 18 (Russian).

USSR UDC 911.3(616-02:591.145.2+632.523
911.3:(616.9-036.21/22)

CLINICAL CHARACTERISTICS OF TICKBORNE ENCAPHALITIS IN PERSONS WHO WORKED WITH VIRUSES ISOLATED IN DIFFERENT GEOGRAPHIC REGIONS

Minsk AKTUAL'N. VOPR. EKOL. VIRUSOV [Current Problems in Viral Ecology, Collection of Works] in Russian 1976 pp 45-48

PROTAS, I. I.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.67 by Ya. Tsilinskiy]

[Text] More than 50 cases of laboratory infection with different viruses of the tickborne encephalitis complex are described in the literature. All 23 reported cases of infection of sheep with louping ill virus occurred in the form of a generalized infection or with symptoms of mild meningoencephalitis and had a favorable outcome. Infection with strains of tickborne encephalitis virus isolated in the Far East produced a severe disease with gross encephalitic and spinal disturbances and high mortality (5 of the 10

who became sick died). Laboratory infections caused by strains isolated in Belorussia and Czechoslovakia occupied an intermediate position between these 2 nosological entities. The two-phase nature of the course and meningoencephalitis were the leading clinical syndrome. Thus, the clinical manifestations of the infection accurately reflect the properties of the tick-borne encephalitis complex viruses circulating in different geographic regions. Together with other data, these findings justify the nosological differentiation of louping ill of sheep from eastern and western equine encephalomyelitis. Bibl. 13 references.

USSR

UDC 911.3(616-02:591.145.2+632.523
911.3:(616.9-036.21/22)

CIRCULATION OF BRUCELLAS IN THE UKRAINE

Omsk PRIRODNOOCHAG. ANTROPOZOONOZY. TEZISY DOKL. K IX VSES. KONF. PRO PRIROD. OCHAGOVOSTI BOLEZNEY CHELOVEKA I ZHIVOTNYKH [Natural Focal Anthropozoonoses. Abstracts of Papers Read at the 9th All-Union Conference on the Natural Focality of Human and Animal Diseases, Collection of Works] in Russian 1976 pp 71-72

KOROTICH, A. S., SHCHERBAK, YU. N., KROLEVETSKAYA, N. M., VASIL'CHENKO, A. A., and ANTONOVA, L. A.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.85 by Ya. Tsilinskiy]

[Text] In the Ukraine, in some foci of brucellosis Norway rats have been found to be infected and, in sanitized foci, dogs and horses. Mice, hares, various artiodactyls, and birds may also be sources of the infection. New and little studied Brucella species are circulating in the Ukraine. Brucella murium was found in 1960 in field mouse populations and B. ovis was isolated in 1970 from sheep and goats. All the B. ovis strains were found in the stable R form and they possessed low virulence. Serological and clinical examination of stock breeders and of individuals exposed to possible infection with B. ovis showed that this Brucella species is not an epidemiological threat to man.

USSR UDC 576.858.75.06.095"1974-1975"

BIOLOGICAL FEATURES OF VIRAL STRAINS RESPONSIBLE FOR THE INFLUENZA EPIDEMIC IN 1974-1975

Moscow VOPROSY VIRUSOLOGII in Russian No 6, Nov/Dec 76 signed to press 14 Jan 76 pp 727-731

SHENDEROVICH, S. F., ZAKSTEL'SKAYA, L. YA., and YAMNIKOVA, S. S., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

[Abstract] Biological features of A type viruses responsible for the influenza epidemic in some areas of the USSR in 1974-1975 are compared with those of viruses circulated in 1968-1972. Viruses of 1974-1975 were nontoxic for mice, sensitive to γ-inhibitors; their hemagglutinin was stable for 60 min at 56°C, similarly as their neuraminidase at 56°C for 30 min. In other words, they resembled in this respect the viruses circulated during 1968-1972. A clear-cut difference was found only in the viral chromatographic characteristics. Viruses of 1974-1975 were eluted by 0.5 M of NaCl in one peak, while those of 1968-1972 were eluted by 0.5 and 0.05 NaCl in two peaks. The amount of eluted viruses varied from 51 to 100%. Tables 3; references 14: 10 Russian, 4 Western.

USSR UDC 911.3(616-02:591.145.2+632.523
911.3:(616.9-036.21/22)

MAIN LANDMARKS IN THE HISTORY OF THE THEORY OF NATURAL FOCALITY OF DISEASES

Omsk PRIRODNOOCHAG. ANTROPOZOONOZY. TEZISY DOKL. K IX VSES. KONF. PRO PRIROD. OCHAGOVOSTI BOLEZNEY CHELOVEKA I ZHIVOTNYKH [Natural Focal Anthropozoonoses. Abstracts of Papers Read at the 9th All-Union Conference on the Natural Focality of Human and Animal Diseases, Collection of Works] in Russian 1976 pp 7-9

GALUZO, I. G.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.41 by T. V.]

[Text] Intensive research has been carried out in recent years on the natural focality of diseases of farm animals. The theory of natural focality is now applied to the study of "diseases of wild animals." Vectors, parasite cenoses of invertebrates and parasite-host relations in the latter are of great interest.

USSR

UDC 911.3(616-02:591.145.2+632.523
911.3:(616.9-036.21/22)

EFFECT OF MAN'S ECONOMIC ACTIVITY ON THE NATURAL FOCI OF DISEASES

Omsk PRIRODNOOCHAG. ANTROPOZOONOZY. TEZISY DOKL. K IX VSES. KONF. PRO PRIROD. OCHAGOVOSTI BOLEZNEY CHELOVEKA I ZHIVOTNYKH [Natural Focal Anthropozoonoses. Abstracts of Papers Read at the 9th All-Union Conference on the Natural Focality of Human and Animal Diseases, Collection of Works] in Russian 1976 pp 46-48

ANDRONNIKOV, V. A.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.47]

[Text] The effect of man's activity on the natural foci of epidemic hemorrhagic fever, tularemia, and leptospirosis in Chuvashia is traced. Increasing contacts between the population and nature are intensifying exposure to natural foci of epidemic hemorrhagic fever and causing dozens of persons to become infected every year. Man's economic activity has little effect on the abundance of the main transmitter of the virus, the red-backed vole. Observations in foci of leptospirosis where such activity has been intense during recent years revealed a slight decrease in the total rodent population. But despite this, the foci show no signs of extinction. On the other hand, no cultures were isolated from 10,000 rodents and 50,000 ticks examined for tularemia, although local inhabitants suffered from the disease in the past. Increased hunting for water voles, muskrats, and hares in the 1960's created unfavorable conditions for tularemia epizootics to develop.

USSR

UDC 911.3:(616-02:591.145.2+632.523)
911.3:(616.9-036.21/22)

NATURAL FOCAL ANTHROPOZOONOSES

Omsk PRIRODNOOCHAGOVYYE ANTROPOZOONOZY. TEZISY DOKL. K IX VSES. KONF. PO PRIROD. OCHAGOVOSTI BOLEZNEY CHELOVEKA I ZHIVOTNYKH, 18-21 MAYA 1976 G. [Natural Focal Anthropozoonoses. Abstracts of Papers Read at the 9th All-Union Conference on the Natural Focality of Human and Animal Diseases, 18-21 May 1976 (Academy of Sciences USSR, Academy of Medical Sciences USSR, Ministry of Health RSFSR, Omsk Institute of Natural Focal Infections, Institute of Zoology, Academy of Sciences KazSSR) 1976 pp 231

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.40 K by L.Z.]

[Text] The collection is divided into the following sections: general matters relating to the theory of natural focality of diseases, infectious diseases (rabies, brucellosis, tuberculosis, leptospirosis, tularemia, pseudotuberculosis, hemorrhagic fevers, tickborne encephalitis, mixed infections),

and parasitic diseases (trichinosis, alveococcosis, diphyllobothriasis, opisthorchosis, and toxoplasmosis).

USSR UDC 911.3:61

SPATIAL MODELS IN THE EPIZOOTOLOGY OF NATURAL FOCAL DISEASES

Omsk PRIRODNOOCHAG. ANTROPOZOONOZY. TEZISY DOKL. K IX VSES. KONF. PRO PRIROD. OCHAGOVOSTI BOLEZNEY ČHELOVEKA I ZHIVOTNYKH [Natural Focal Anthropozoonoses. Abstracts of Papers Read at the 9th All-Union Conference on the Natural Focality of Human and Animal Diseases, Collection of Works] in Russian 1976 pp 35-36

ROTSHIL'D, YE. V.

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 11, 1976 Abstract No 11.36.8 by T. Vorontsova]

[Text] Spatial models were worked out for plague and their use in different stages of investigation was demonstrated. A model of an epizootological survey of natural foci can be of value in optimizing the detection of epizootics. The methods of probability theory and new data on the structure of epizootics were utilized in preparing the model. The spatial model was used to analyze the patterns of distribution of rodent holes with infected animals. The model is described in terms of the mathematical theory of graphs, which was employed to obtain the objective characteristics of the structure and development of the simplest formations within epizootic regions. The author also proposes a clear graphic model containing a rational scheme of the operations to be performed in analyzing initial data for predicting the position that natural focal diseases will occupy in the work of agencies concerned with controlling epidemics.

USSR UDC 614.4(47+57)

QUALITY AND EFFECTIVENESS OF EPIDEMIC CONTROL

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 12, 1976 signed to press 12 May 76 pp 3-9

BELYAKOV, V. D., Leningrad

[Abstract] The maximum extent to which morbidity can be prevented or reduced by taking a given action or actions is the standard used for evaluating control action(s). There are 3 approaches to determination of the standard (or potential effectiveness): (i) study of the level, structure,

and dynamics of a disease over a period of years in relation to the actions taken; (ii) study of the level, structure, and dynamics of a disease in different places (or among different groups differentiated by the actions taken in the same period of time; (iii) analysis of various characteristics of the epidemic process in several epidemic foci differing in the actions taken or in a single focus following the actions taken in different stages of development of the epidemic process. The results obtained by each method must be interpreted with great care to ensure that all possible relevant factors have been considered and irrelevant ones excluded. Figures 3; tables 2; no references.

USSR UDC 577.152 547.458.88

DEPENDENCE OF THE PECTOLYTIC ACTIVITY OF ENZYMATIC PREPARATIONS ON SOME PHYSICOCHEMICAL PROPERTIES OF THE SUBSTRATE

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR. SERIYA BIOLOGICHESKIKH I KHIMICHESKIKH NAUK in Russian No 5, 1976 pp 37-40

LAPSKER, Z. I., and TROFIMENKO, N. M.

[Abstract] Most fruit juices and wines contain finely dispersed colloidal substances, pectins, which make the processes of juice extraction, clarification and filtration difficult. Used for pectolysis are complex enzymatic preparations produced by certain microorganisms. Data were obtained which show the dependence of the pectolytic activity of Pectocinerin G-10kh and P-10kh on the substrate. It is found that there is an inversely proportional dependence between the polygalacturonase activity and the degree of esterification of the pectin, whereas the connection between the pectinmethylesterase activity and the degree of methoxylation of the substrate is strictly proportional. Tables 2; references 9: 8 Russian, 1 Western.

USSR UDC 612.392.013.7-687.1

CALCULATIONS OF THE ENERGY VALUE OF THE PEOPLES DIET

Moscow VOPROSY PITANIYA in Russian No 6, Nov/Dec 76 signed to press 9 Feb 76 pp 73-74

MEYEROVICH, R. I., Institute of Nutrition, Academy of Medical Sciences USSR, Moscow

[Abstract] In the investigation of what the people eat calculations to determine the energy content of food products are of great importance, but the energy supplied by alcoholic beverages has not usually been included in such calculations. It is recommended that alcoholic beverages be included in the "Tables of the Chemical Composition of Soviet Foodstuffs" now being prepared. References 11: 9 Russian, 2 Western.

USSR UDC (577.1:574.5) (26)

HYDROCARBONS IN MARINE ORGANISMS

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian No 6, 1976 signed to press 9 Mar 76 pp 5-15

MIRONOV, O. G., and SHCHEKATURINA, T. L., Institute of Biology of the Southern Seas, Academy of Sciences UkSSR, Sevastopol

[Abstract] Various kinds of hydrocarbons (alkanes, alkenes, etc.) are synthesized by fishes, mussels, bacteria, and other marine organisms. These and other hydrocarbons are also taken up by the latter from petroleum products present in the sea. Some of the differences between natural and artificial hydrocarbons are as follows: (i) petroleum contains a more complex mixture of hydrocarbons with a wider range of molecular weights and structures than do organisms; (ii) petroleum contains a large number of homologous series and the members of a series are usually present in equal concentrations; (iii) aromatic hydrocarbons and cycloalkanes are more abudant in petroleum than in organisms; (iv) petroleum contains a large quantity of naphthene-aromatic hydrocarbons not found in marine organisms. Natural hydrocarbons can be distinguished from allochthonous hydrocarbons in zoo- and phytoplankton by infrared and ultraviolet spectrometry, gas chromatography, and mass spectrometry. References 57: 2 Russian, 55 Western.

USSR UDC 591.524.12(286)

ZOOPLANKTON OF THE DNIESTER ESTUARY AND ADJACENT WATERS UNDER THE INFLUENCE OF MAN'S ECONOMIC ACTIVITY

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian No 6, 1976 signed to press 31 Mar 75 pp 37-45

POLISHCHUK, L. N., Odessa Division, Institute of Biology of the Southern Seas, Academy of Sciences UkSSR

[Abstract] Hydrological conditions have changed appreciably in recent years in the Dniester River and its estuary due to the coming on stream of the Dubossar Power Plant, expansion of farmland under irrigation, construction of a canal, and removal of steadily larger quantities of water for industrial and household use. As a result, the Dniester flow decreased between 1945 and 1970 by 14% and the process is continuing. The zooplankton also changed qualitatively and quantitatively because of displacement of autochtonous organisms by marine immigrants. During the period under study (1972) some marine planktonic forms (Acartia clausi, Oithona minute) penetrated as far as the northern part of the estuary. More than 50 species, varieties, and larger taxonomic forms, including 20 marine immigrants, are present throughout the estuary (12 species were found for the first time). The total zooplankton abundance in summer is now only one-sixth that which prevailed

in the 1950's. These changes were caused less by diminution of the Dniester flow than by the recent intensification of eutrophication of the northwestern Black Sea shelf by the inflow of water saturated with organic matter from industrial, agricultural, and household wastes. The author forecasts that the planned construction of a power plant and 3 reservoirs will produce irreversible changes in the biological processes, principally the displacement and disappearance of the indigenous fauna, first the freshwater and then the brackish-water, and then the formation of marine biocenoses. Figures 5; tables 2; references 16 (Russian).

USSR UDC 615.9:547.56:547.567:582.26.581.19:576.321:577.15.04.576.345

EFFECT OF PHENOLS ON SOME ALGAL SPECIES

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian No 6, 1976 pp 53-57

STOM, D. I., and BEYM, A. M., Institute of Biology at Irkutsk State University and All-Union Scientific and Industrial Association of the Paper and Pulp Industry

[Abstract] Ferguson's principle was used to determine the toxicity of 16 phenol compounds for the alga Nitella (according to the concentrations that halted the movement of its protoplasm in 15 minutes). Those found to have specific action were guiacol, dimethyl hydroquinone ester, β-naphthol, o-aminophenol, 2-phenylsulfonyl hydroquinone, 4-phenylsulfonyl pyrocatechol, veratrole, thymol, phloroglucinol, and α-dinitrophenol. Hydroquinone, pyrocatechol, and p-benzoquinone were specific; o-cresol, resorcinol, and monophenol occupied an intermediate position, acting more like such biological depressants as hexyl alcohol and chloroform than as structurally specific agents. The action of β-naphthol, phloroglucinol, dimethyl hydroquinone ester, and pyrocatechol proved to be reversible, for the movement of the protoplasm in the Nitella cells following exposure to these compounds resumed after the algae were thoroughly washed with water. Table 1; references 14: 12 Russian, 2 Western.

USSR UDC 616-002.5-085.371-032:611.778

EVALUATION OF THE EFFECTIVENESS AND QUALITY OF BCG REVACCINATION IN ADULTS

Moscow PROBLEMY TUBERKULEZA in Russian No 11, Nov 76 pp 10-13

ABRAMOVSKAYA, A. K., candidate of medical sciences, Belorussian Scientific Research Institute of Tuberculosis, Minsk

[Abstract] Results are evaluated of the intradermal BCG vaccination of 2703 adults (17-24 year old) on the basis of 4648 individual examinations. The interdermal BCG vaccination left small skin marks (5-7 mm in diam.) in 93.1% of individuals one year after inoculation. The presence of these scars, 2.4% of which were of keloid nature, can serve as a reliable criterion for quality evaluation of BCG revaccination. The post-vaccinal allergy lasted as long as 8 years in 89.5% of cases. The sensitivity to tuberculin of individuals of the same age group is compared with that obtained among 962 individuals spontaneously infected with tuberculosis. The BCG vaccination of adults cannot prevent a spontaneous development of tuberculosis many years after the vaccination. References 10 (Russian).

USSR UDC 615.371:576.851.42

IMMUNOGENIC PROPERTIES OF PROTECTIVE BRUCELLA ANTIGEN UPON REVACCINATION

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 12, 1976 signed to press 26 Apr 76 pp 94-99

DRANOVSKAYA, YE. A., and VERSHILOVA, P. A., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Intramuscular injection of guinea pigs with 0.3 and 0.6 mg of protective Brucella antigen 3, 6, and 12 months after initial vaccination with the same doses of antigen markedly stimulated antibody formation. The effect was most pronounced when the 0.6 mg dose was used 12 months after the initial vaccination: 77.8% of the animals were immune to infection with a virulent culture of Br. melitensis 565 (compared to 11.1% when the 0.3 mg dose was used). The antigen was also highly effective 9 and 12 months after primary immunization with live vaccine (Br. abortus 19-BA): 100 and 81% of the animals, respectively, were found to be immune. Figure 1; tables 3; references 3 (Russian).

USSR UDC 597.583.1-111.615.9

CHANGE IN SOME PARAMETERS OF CARBOHYDRATE METABOLISM IN PICKEREL AND SOLE EXPERIMENTALLY POISONED WITH DISSOLVED OIL PRODUCTS

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian No 6, 1976 signed to press 18 Dec 74 pp 84-88

KOTOV, A. M., Georgian Division, All-Union Institute of Marine Fishery and Oceanography, Batumi

[Abstract] Blood glucose, glycogen, and lactic acid levels were determined in pickerel (Spicara smaris) and sole (Solea lascaris nasuta) exposed to different concentrations of dissolved oil products (0.05 to 19.0 mg/liter) for 5 hours to 42 days in acute, subacute, and chronic experiments. All the tested concentrations of the compounds induced two-phase changes in the carbohydrate metabolism of both fish species: initial accumulation of glucose and glycogen and decrease in lactic acid followed by a decrease in glucose and glycogen and an increase in lactic acid. All the concentrations were toxic to the fishes. Even the lowest dose, 0.05 mg/liter, caused significant changes in the glucose, glycogen, and lactic acid levels. These findings suggest that carbohydrates are intensively utilized by fish in water polluted by oil. The energy is apparently expended on stimulating the defensive functions of the organism. Figures 4; references 25: 22 Russian, 3 Western.

USSR UDC 615.285.7.065

STUDY OF REMOTE RESULTS OF USE OF REPELLANTS. COMMUNICATION II. SOME PROBLEMS OF REGULATION OF USE OF DIETHYLTOLUAMIDE (DETA) REPELLANT

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 45 No 6, Nov/Dec 76 signed to press 12 Apr 74 pp 720-725

VASHKOV, V. I. (deceased), GLEYBERMAN, S. YE., and VOLKOVA, A. P., All-Union Scientific Research Institute of Disinfection and Sterilization, Moscow

[Text-English language abstract supplied by authors] New evidence on toxicity of diethyltoluamide (DETA) repellent such as long-term persistence in the body, remote gonado- and embryotoxic effects makes it necessary to reconsider the tactics of its use and to limit direct application of this repellent to the human skin significantly. The preference should be given to mechanical means of individual protection (dresses of special tissues, vaccination or impregnation of the dress, nets and canopies with repellents, etc.). It is necessary to investigate the fate of all repellents in warm-blooded animals and the occurrence of the remote results of their long-term use. References 27: 25 Russian, 2 Western.

USSR

UDC 57:62.50

IN THE WORLD OF WHALES AND DOLPHINS

Moscow ZNANIYE 1974 207 pp 77 kop

TOMILIN, A. G.

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No 10 (I) 1976 Abstract No 10 S281 Rev. by V. P. Volkov]

[Text] An important place in the reviewed book, which deals with current problems in the biology of cetaceans, is devoted to bionics, physiology and bioacoustics of dolphins. The author examines the theory of Dreyer--on the possibility of perception by dolphins of a holographic image--, reflex regulation of fin flexibility as a function of needed travelling speed of cetaceans, which provides as optimal for this speed a flexibility not only of the tail fin but, also, of the other fins. Attention is especially warranted by the Chapters "Fate of the Analyzers," and "Acoustic Eyes of Dolphins."

BULGARIA

THE EFFECT OF OIL AND OIL DERIVATIVES ON OXYGEN CONSUMPTION AND MULTIPLICATION OF A BACTERIAL STRAIN ISOLATED FROM THE BLACK SEA

Sofia DOKLADY BOLGARSKOY AKADEMII NAUK in English Vol 29 No 9, 1976 pp 1353-1356

DECHEV, G. D., and DAMYANOVA, A. A., Institute of Nuclear Research and Nuclear Energy, Academy of Sciences Bulgaria, Sofia

[Abstract] The authors studied the effect of crude oil, oil derivatives, and detergents on bacterial growth. A bacterial strain No 175 isolated from sea water near Bourgas was grown in 20% glucose and 0.4% peptone in sterile sea water; four samples of crude oil (from Syria and Iraq, and from Grozny and Romashkin, USSR) were added at concentrations of 0.01 to 0.1%, oil derivatives--light and heavy diesel, natural, and dearomatized--were added as contaminants. The oils and their derivatives differ in their effect on the bacteria; the higher oil concentrations have an essentially inhibitory effect; the derivatives are found to have a stimulatory effect in the first 7 hours, followed by inhibition. After 48 hours the bacteria increase, indicating that No 175 modifies its metabolism to utilize oil after the glucose and peptone are exhausted. Figure 4; references 6: 4 Russian, 2 Western.

USSR UDC 577.472

COMBINED EFFECT OF ZINC, CHROMIUM AND CADMIUM ON BACTERIAL BIOMASS PRODUCTION

Moscow VESTNIK MOSKOVSKOGO UNIVERSITETA, BIOLOGIYA, POCHVOVEDENIYE in Russian No 5, Sep/Oct 76 signed to press 19 Jan 76 pp 96-98

KORSAK, M. N., NAKANI, D. V., and KHOL'NAYA, G. G., Department of Hydrobiology, Biology Faculty, Moscow State University

[Text-English language abstract supplied by authors] The present work was carried out at the Rybinskoye reservoir in the summer of 1974. Some tolerance limits of zinc, chromium and cadmium were chosen for the investigation. The bacterial production was estimated by ^{14}C heterotrophic assimilation. Natural water included in polyethylene containers was used. The bacterial production was determined in one and three days after the beginning of experiment. In most of experiments the negative influence of zinc and chromium on the bacterial biomass production was registered only after 3 days of expositions. The effect of cadmium during the whole period of observations proved to be unreliable. The effect of chromium was practically constant at various times of the season. The interaction of toxicants was not revealed in any series of experiments. References 8: 5 Russian, 3 Western.

USSR UDC 628.353.153:576.851.315.095.1

EXTENDED SURVIVAL OF EL TOR CHOLERA VIBRIOS IN NATURALLY INFECTED SEWAGE

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 12, 1976 signed to press 5 Apr 76 pp 61-65

ZAYDENOV, A. M., SAYAMOV, R. M. et al, Rostov Scientific Research Institute of Plague Research

[Abstract] Typical cholera vibrio strains were isolated from the oil-laden sewage of a locomotive roundhouse over a period of 447 days. The vibrios apparently came from the regular plumbing system which contained infected feces of humans suffering from chronic gastrointestinal diseases. The vibrios survived 36 days in a detached oil trap filled with naturally infected sewage (pH 7.1 to 9.3), 39 days in samples kept in the laboratory, and 14 months in emulsions of petroleum and diesel fuel. In artificially infected sewage from a village and dairy, the vibrios survived 2 and 11 days, respectively. (Petroleum and diesel fuel obviously do not possess bactericidal properties and thus provide comparatively favorable conditions for the prolonged survival of cholera vibrios in the absence of competing microflora). Acidification of the sewage to pH 4.0 to 3.0 followed by chlorination resulted in complete disappearance of the vibrios. Tables 2; references 6: 4 Russian, 2 Western.

USSR UDC 576.8.095.7

PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS IN SELECTION OF AUTOMATED METHODS FOR MONITORING MICROBIOLOGICAL SYNTHESIS

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 6, Nov/Dec 76 pp 834-838

RYLKIN, S. S., SAMOYLENKO, V. A., GURINA, L. V., VINOGRADOV, B. D., CHIGALEYCHIK, A. G., and ORLOVA, V. S., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

[Abstract] Effect of cultivation conditions of Candida tropicalis IBFM Y-303 and Pseudomonas boreopolis 526 on population changes and variation in the physiological and biochemical parameters of cells was studied. The size of C. tropicalis Y-303 and Ps. boreopolis 526 cells changed as a function of the continuous flow rate (D). With increasing D, the ratio between different sizes of C. tropicalis IBFM Y-303 cells shifted toward small and average size, and at D = 0.2 hr^{-1}, the population was represented mainly by small cells. The concentration of biomass also decreased with increasing D. The yield of a single fermentation vessel decreased from 1 to 0.78 g of biomass/liter·hr when D changed from 0.17 to 0.2 hr^{-1}. With increasing D from 0.15 to 0.2 hr^{-1} the total protein increased from 37.9 to 45.5%, and the concentration of essential amino acids, from 20.8 to 24.8 g/100 g of dry biomass. The growth of C. tropicalis IBFM Y-303 can be controlled automatically, provided the D is kept close to 0.18 hr^{-1}. In the case of Ps. boreopolis 526, the activity of asparaginase II and glutaminase II increased at first when D was changed from 0.05 to 0.25 hr^{-1}, then their activity remained at a stationary level, but the activity of asparaginase I, the average size of cells and their distribution dropped. Therefore, automatic growth control methods should keep D at high levels for asparaginase II and glutaminase II, and at low levels for asparaginase I. Figures 1; tables 3; references 21: 9 Russian, 12 Western.

USSR

UDC 663.12/14

FIXATION OF BREWERS YEAST ON POLYMERIC MATERIALS

Moscow PRIKLADNAYA BIOKHIMIYA I MIKROBIOLOGIYA in Russian Vol 12 No 6, Nov/Dec 76 pp 866-870

KOLPAKCHI, A. P., ISAYEVA, V. S., ZHVIRBLYANSKAYA, A. YU., KAZANTSEV, E. N., SEROVA, YE. N., and RATTEL', N. N., All-Union Scientific Research Institute of Beer and Non-alcoholic Beverages

[Abstract] To intensify fermentation of beer brewing wort and to increase the number and activity of Saccharomyces carlsbergensis yeast in it, experiments were carried out with cellophane, caprone, fluoroplast and polyethylene. The fixation of yeast cells on polymers in brewing wort containing $25 \cdot 10^6$ yeast cells/ml. was checked 3 hr after the beginning of experiments. The total number of yeast cells attached to fluoroplast (different strength of attachment) was 78%, and it amounted to 55-65% for remaining polymers. Of the total number of yeast cells in the wort, 15% and 11% were strongly fixed on cellophane and fluoroplast, respectively. Polyethylene occupied an intermediate position in this respect, and only 1% of yeast cells were strongly fixed on caprone. The strength of the yeast cells attachment varied for different polymers. It depended on the shape of polymers in the brewing wort. About 4% of cells were strongly fixed on a continuous cellophane strip, 6 and 10% on cellophane net and fluoroplast chips, respectively. Altogether, about 55-75% of yeast cells were attached to polymers with a different strength. The fermentation of 7 liters of the brewing wort was completed in 50 hr when polyethylene net with attached yeast cells was used, as compared with 73 hr of brewing without polymers. The number of yeast cells on polymer fillers in the brewing wort increased tenfold in 50 hr of brewing. The fermentation activity of yeast cells amounted to 68.1 ml. of CO_2 in 3 hr (before experiments) and to 70.6 ml of CO_2 after experiments when fillers were used. It was 70.2 ml of CO_2 for control. Figures 4; references 10 (Russian).

USSR UDC 576.8:663.1

MICROBIOLOGICAL PREPARATIONS (MIKROBIOLOGICHESKIYE PREPARATY), Institute of Microbiology, Academy of Sciences Lat. SSR, Riga. Zinatne, 1976, 214 p., ill., 1r 30k

NO AUTHORS LISTED

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No 10 (I) 1976 Abstract No 10 L438K. Annotation]

[Text] This is a collection of articles on biosynthesis of aminoacids, organic acids, enzymes, and other biologically active substances of great importance for the national economy. Patterns of conditions of cultivation and directed biosynthesis of microbial metabolites are examined, and a survey is made of data obtained as the result of selection of new productive strains. A number of articles deal with search for new non-deficit sources of carbon, with production of microbial metabolite fodder preparations, and study of their biological effectiveness. A part of the collection deals with large-scale metabolism in cultivation of microorganisms, methods for regulating these processes, and new apparatus intended for isolation of the purified preparations.

USSR UDC 576.8:577.47

BACILLUS VALINOVORUS VAR. NITROANILINI STRAIN

USSR AUTHORS' CERTIFICATE kl S 12 k 3/00, S 02 s 5/10, No 488857, FILED 20 Jun 73, No 1936211, PUBLISHED 16 Jan 76

ROTMINSTROV, M. N., UDOD, V. M., GVOZDYAK, P. I., and PODORVAN, N. I., Institute of Colloidal Chemistry and Water Chemistry, Academy of Sciences Ukr SSR

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No 10 (I) 1976 Abstract No 10 L604 P by A. R.]

[Text] A new strain Bac. valinovorus var. nitroanilini is proposed for use in biochemical purification of sewage; it decomposes p-nitroaniline at concentrations of 500-700 ml/g, even through the stage of formation of p-phenylenediamine, to the end products--carbon dioxide and water. A morphological and physiological biochemical characterization of the new strain is presented.

USSR UDC 576.8:577.47

SANITARY-BACTERIOLOGICAL EVALUATION OF THE EFFECTIVENESS OF BIOLOGICAL PURIFICATION OF SEWAGE IN COMPACT PURIFICATION UNITS MANUFACTURED BY PLANTS

Kharkov TEZISY DOKLAD. VSES. NAUCH-TEKH. KONF: OSNOVN. PROBL. RAZVITIYA NAUC-ISSLED. I PROYEKT.-KONSTRUKT. RABOT PO TEKHNOL. OCHISTKI STOCH. VOD I OBRABOTKI OSADKA. "TEKH. PROGRESS, V. IBL. OTVODA I OCHISTKI GOR. STOCH. VOD" Summary of reports of the All-Union Scientific-Technical Conference: Fundamental Problems in Development of Scientific Research and Construction Design Work in Technological Purification of Sewage and in Sludge Processing. "Technical Progress in the Field of Tapping and Purification of Hot Sewage" Kharkov 1976 pp 219-221

ZAKHARKINA, A. N., SOLOGUB, A. M., ZHURAVLEVA, YE. A., and MOISEYICHEVA, M. M.

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No 10 (I) Abstract No 10 L605 by A. R.]

[Text] Results of investigations show high effectiveness of biological purification of domestic sewage in investigated DEVICES KU-12, KU-25, KU-100, KU-200, KU-400. At the same time, the presence in the purified water of a large absolute amount (thousands and tens of thousands per ml) of saprophytic and sanitary-indicative microorganisms does not permit classifying it as safe from the epidemiological aspect. In this connection, sewage waters, subsequent to biological purification, must be subjected to obligatory disinfection before they are discharged into reservoirs.

USSR UDC 576.8:577.15

STUDY OF LYTIC ENZYMES

MIKROBIOL. PROM-ST' NAUCH-TEKH REF. SB (Microbiological Industry Scientific-Technical Abstract Collection) No 3 (134), 1976 pp 17-20

LOSYAKOVA, L. S., PIS'YAUK, N. A., ULANOVA, V. S., and RUMYANTSEV, V. M.

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No 10 (I) 1976 Abstract No 10 L444 by A. R.]

[Text] The purpose of this work was to choose a producer to synthesize enzymes with lytic action, and to match it with a nutrient medium which is optimal for their biosynthesis. Of 3 tested strains of Bacillus subtilis, B. cereus, and Pseudomonas striata, the culture liquor of B. cereus and B. subtilis B-428 showed maximum degree of hydrolysis of the cellular walls of yeasts. In contrast to B. subtilis, B. cereus did not exhibit proteolytic activity and for this reason was chosen as the producer of lytic enzymes. As a result of the studies carried out, selection was made of a

nutrient medium with the following composition, %: $(NH_4)_2HPO_4$--0.48,KCL--0.15, $MgSO_4$--0.05, $CaCl_2$--0.01, BVK--0.1, starch of insoluble sweetener--2.0, pH 7.2-7.3. Maximum accumulation of lytic enzymes was observed at 20-24 h of cultivation. The activity, here, expressed in percentage hydrolysis of BVK, was 39.42%. With further prolongation of cultivation, a decrease was seen in lytic activity.

USSR UDC 576.085.23:570.312.32:576.858

CYTOGENETIC STUDY OF PERSISTENTLY INFECTED CULTURES OF SUCKLING MOUSE BRAIN CELLS

Kiev TSITOLOGIYA I GENETIKA in Russian No 6, 1976 signed to press 3 Feb 76 pp 532-534

MIKHAYLOVA, G. R., DERYABIN, P. G., CHEREDNICHENKO, YU. N., and GAVRILOV, V. I., deceased, Institute of Virology, Academy of Medical Sciences USSR, Moscow

[Abstract] Cytogenetic study of 3 strains of suckling mouse brain cells chronically infected with Japanese encephalitis and tickborne encephalitis viruses and a "spontaneously" transformed culture of suckling mouse brain cells showed that all the cultures in early passages (12th to 22nd) were in the stage of forming heteroploid cells. The presence of microchromosomes and metacentric chromosomes in the cells was characteristic of the given cultures. The latter became continuous cell strains unlike the controls (noninfected and inoculated with a suspension of normal suckling mouse brain cells) which quickly lost their ability to proliferate and invariably degenerated by week 4 or 5. References 6: 3 Russian, 3 Western.

USSR UDC 577.154.35.07

CONDITIONS OF THE CONCENTRATION OF THE LIQUID CULTURE MEDIUM OF THE FUNGUS Rhizopus arrhizus FISCHER

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR. SERIYA BIOLOGICHESKIKH I KHIMICHESKIKH NAUK in Russian No 5, 1976 pp 40-43

YEFREMOVA, L. L., IL'INSKAYA, S. P., TELEMBUTSA, N. N., and KOSTIK, F. D.

[Abstract] In the production of enzymatic preparations it is advisable to concentrate the solutions. This considerably simplifies the separation of enzymes and also reduces the consumption of organic solvents or salts used to precipitate the enzymatic proteins. It has been established that for

maximal preservation of pectolytic activity it is advisable to concentrate the filtrate of a liquid culture medium with a pH of 3.0-4.0 at 30-40°C for 1 to 2 hours to a concentration of dry matter of 8% in the presence of 0.005 M $MgCl_2$. Tables 5; references 7 (Russian).

USSR UDC 576.852.15.095

FRACTIONAL COMPOSITION OF PHOSPHOLIPIDS OF ACTINOMYCETES

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR. SERIYA BIOLOGICHESKIKH I KHIMICHESKIKH NAUK in Russian No 5, 1976 pp 43-45

KOVAL'CHUK, L. P., BURTSEVA, S. A., KRETSU, L. G., and RAZUMOVSKIY, P. N.

[Abstract] Phospholipid fractions from the mycelia of Actinomyces canosus 89, Act. griseus 20, Act. cineraceus 468 and Act. albodenitrificans 13^a cultivated on complex medium 1 have antimicrobial properties in relation to a number of gram-positive and gram-negative microorganisms. Chromatographic data are presented on them. It was found that their qualitative composition is not identical and consists of 8-9 individual fractions, more than half of which contain diphosphatidiglycerin, phosphatidiethanolamine, phosphatidylcholine and sphingomyelin. References 11: 7 Russian, 4 Western.

USSR UDC 582.282.123 : 620.193.82 : 666.22

CONTAMINATION OF OPTIC DEVICES BY SOME MOULD FUNGI

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 12 Jan 76 pp 282-287

RODIONOVA, M. S., and BEREZNIKOVSKAYA, L. V.

[Abstract] Conditions for development of fungi on the surface of glass optical devices and lenses in the Soviet Union were studied. Aspergillus peniciloides and A. tonophilus can grow on a dry surface drawing moisture from the air. They grew intensively and at a lower relative humidity than any of the group MEK (= A. niger, A. amstelodami, Paecilomyces varioti, Stachybotrys atra, Penicillium brevi-compactum, P. cyclopium, Chaetomium globosum) on optical silicon glass with a polished surface and illuminating and water-protective surfaces. The K-8 brand lenses were at least 69% SiO_2 and were coated with fungicide. Fungal suspensions were placed on the lenses and incubated at 98-100% relative humidity and 30 C. Fungal growth on optical devices considerably reduces the coefficient of light transmission and increases the coefficient of light dispersion of the devices. Cultures of

A. penicilloides and A. tonophilus can serve as test organisms in testing optical devices and instruments for fungal resistance. Optical devices protected by vinyl trichlorosilane and mercurous acetate do not inhibit cultures of A. penicilloides nor A. tonophilus, but none of the mixed culture (MEK) grew during the 6-month test period with these inhibitors. Tables 3; figures 3; references 9: 6 Russian, 3 Western.

FUNGI OCCURRING ON RUBBERIZED VENTILATION TUBES IN MINES

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 4, 1976 signed to press 5 Mar 76 pp 287-288

SEMAN, E. O., Botanical Institute imeni V. L. Komarov, Academy of Sciences USSR, Leningrad

[Abstract] This is the first study in the USSR of fungal degradation of rubber ventilation tubes. Mines were inspected in the Armenian SSR, Murmansk Oblast and the North Caucasus. Samples were collected from mines in these areas as well as in Orenburg and Irkutsk Oblasts. About 100 species were studied many of which are normal soil inhabitants and occur on tubes by chance, but which can grow on them. The tubes have a chafer fabric (cotton) base, a glue-paste or rubber lining and rubber glue--all biodegradable. Temperature and relative humidity were less important than bacteria and fungi in tube deterioration. About 40 species of those collected demonstrated potential for biodegradation. Most destructive were such fungi as Acremonium charticola, Chrysosporium pannorum, Scopulariopsis brevicaulis. Laboratory work is needed to establish exactly which species are most active. References 10: 5 Russian, 5 Western.

GDR

THE PHASIC BEHAVIOR OF THE VESTIBULAR REACTION IN RESPONSE TO MONOAURAL TEMPERATURE STIMULATION

Greifswald ZEITSCHRIFT FUR MILITARMEDIZIN in German Vol 17 No 5, Oct 76
signed to press 22 Jun 76 pp 256-259

EUBE, H., lieutenant colonel, doctor of medicine, and GRONAU, A., captain, doctor of medicine

[Abstract] Prolonged thermal monoaural examinations up to 30 minutes duration show an equal nystagmus reaction throughout the entire cold or warm (44°, 30°, 20° C) stimulation. This in part contradicts the results of SALOMA and CARBONERA who, on prolonged irrigation (20 min, 45°C, 1 cm^3/sec), found a rapid weakening and exhaustion of the nystagmus during the stimulation while they observed an inexhaustible nystagmus when using water at 30, 20 or 10°C for the irrigation--in agreement with the current results. In the military, great demands are made on motion coordination. By use of the experimental method described for the examination of the vestibular apparatus, it is possible to obtain additional insight in the mode of reaction and functional capability of the vestibular section of the entire opto-vestibulospinal system. With the results of such objective examination methods, new aspects are given for the selection of personnel whose service involves activities stressful for their balance. Figures 6; table 1; references 10: 2 East German, 8 Western.

GDR

METHOD FOR THE PERFORMANCE OF SPIROGRAPHY UNDER THE PROTECTIVE MASK SchM 41 M

Greifswald ZEITSCHRIFT FUR MILITARMEDIZIN in German Vol 17 No 5, Oct 76
signed to press 3 Nov 75 pp 268-271

FUNKE, P., major, doctor of medicine

[Text] [German abstract provided by the source] A method of spirography under the protective mask SchM 41 M is described which can be used in field practice. Vital capacity, forced expiratory volume, maximal voluntary ventilation, respiratory pause and minute volume were measured in 109 healthy subjects under normal conditions, using filter RSch 4 and under protective mask SchM 41 M with filter RSch 4. Under SchM 41 M, there was a significant decrease in vital capacity (3.9%), forced expiratory volume (14.4%) and maximal voluntary ventilation (20.6%) in comparison to normal conditions. In the forced expiratory volume test, 70% of the vital capacity was reached with SchM 41 M. Under the protective mask, the threshold to obstruction is reached even under resting conditions. Figures 7; no references.

GDR

VESTIBULAR REACTION THRESHOLDS IN RESPONSE TO CORIOLIS-ACCELERATIONS AND THEIR RELATIONSHIP TO SUSCEPTIBILITY TO KINETOSIS

Greifswald ZEITSCHRIFT FUR MILITARMEDIZIN in German Vol 17 No 5, Oct 76
signed to press 27 Jan 76 pp 251-253

PROHL, W., lieutenant colonel, doctor of medicine

[Text] [German abstract provided by the source] Using an electronic rotating chair, the nystagmus thresholds (ENG) and the thresholds for tipping sensation, as a result of the effect of Coriolis accelerations, were determined in the course of sitting up from a reclining position as well as of returning to the prone position. The threshold values obtained in degree/second were compared with the results (point values) of the author's modification of the method of continuous cumulation of Coriolis accelerations by MARKARJAN/JUGANOV and the coefficients of correlation were calculated. There was no correlation detected between the thresholds for nystagmus and the sensory reaction (tipping sensation) in response to Coriolis accelerations, and the degree of vestibulo-vegetative stability of the subjects. Figure 1; table 1; no references.

USSR UDC 616-006.6-092

PECULIARITIES OF TRANSPLACENTAL BLASTOMOGENIC ACTION OF N-NITROSOMETHYLUREA IN RATS WITH PERSISTENT ESTRUS

Leningrad VOPROSY ONKOLOGII in Russian Vol 22 No 11, 1976 pp 98-102

ALEKSANDROV, V. A., and ANISIMOV, V. N., Laboratory of Experimental Tumors and Laboratory of Endocrinology, Order of Labor's Red Banner Scientific Research Institute of Oncology imeni Professor N. N. Petrov, Ministry of Health USSR

[Text-English language abstract supplied by authors] As a result of transplacental exposure of rats to NMU (intraperitoneally) on the 21st day of pregnancy in the dosage of 20 mg/Kg, tumors in the offspring developed in 6 of 16 females and in 10 of 17 males. In rats with persistent estrus, induced in sexually mature females by their castration and one-moment autoimplantation of ovaries in the tail, tumors developed in 25 of 41 animals. In combination of transplacental effect of NMU and postnatal induction of persistent estrus in females, neoplasms were recorded in 14 or 17 animals; incidence of neoplasms of the nervous system and kidneys was observed only after transplacental NMU exposure of males was increased. Hormonalmetabolic shifts observed in rats with persistent estrus seemed to potentiate transplacental blastomogenic action of NMU. Table 1; references 11: 9 Russian, 2 Western.

USSR UDC 616-006.6-02:547.814):612.015.3)-092.0:547

POSSIBILITY OF ACCUMULATION IN TISSUE AND ELIMINATION OF 3.4-BENZPYRENE FROM FISH

Leningrad VOPROSY ONKOLOGII in Russian Vol 22 No 11, 1976 pp 102-105

BARANOVA, L. N., DIKUN, P. P., OSTROUMOVA, L. A., and TIMOSHINA, L. A., Laboratory of Biophysics, Order of Labor's Red Banner Scientific Research Institute of Oncology; Laboratory of Physiology of Fish, State Scientific Research Institute of Lake and River Fisheries

[Text-English language abstract supplied by authors] One-year and two-year rainbow trout and two-year carp during different periods (from 2 months to 1 year) were given protein-vitamin food additives containing 3,4-benzpyrene (BP). The total amount of BP entering the organism of fish for the whole period of the experiment reached 12.6 mg/Kg of fish weight in daily dosage ranging from 0.1 to 4.1 m/Kg. In fish tissues BP was either not detected at all, or the content of the carcinogen in them did not exceed its amount in the control. In summer BP was not excreted in feces, but in winter its excretion amounted to 13% of its daily consumption with food. Tables 3; references 6 (Russian).

USSR UDC 616.006.6-092.9-02 615.277.4]-084 613.281 639.512

INFLUENCE OF KRILL PASTE, A NEW FOODSTUFF, ON CHEMICAL CARCINOGENESIS

Moscow VOPROSY PITANIYA in Russian No 6, Nov/Dec 76 signed to press 5 Apr 76 pp 61-65

MAYSTRUK, P. N., RUBENCHIK, B. L., and ROMANENKO, A. M., Laboratory of Radiology, Carcinogenic Factors and Pathomorphology, Kiev Scientific Research Institute of Nutritional Hygiene

[Abstract] Because some marine organisms contain substances which inhibit the development of tumors and leukoses or increase resistance of the organism to them, an experiment was conducted to determine whether krill paste obtained from ocean shrimp is capable of inhibiting chemical carcinogenesis caused by n-dimethylaminoazobenzene (DAB) (an azo dye) and diethylnitrosamine (DENA) (a nitro compound). DAB induced liver tumors in 90.8% of test rats against a background of a casein-rich diet and in 21.7% of animals receiving the krill paste as a part of their diet. With DENA the lowest percentage (43) of induced tumors and inhibited development were noted in rats fed the krill paste, the highest (74) when the animals were fed beef and 50% in the case of the casein-rich diet. Specific features of the morphogenesis of DENA-induced tumors in animals on diets containing different types of protein were studied, and also histochemical and biochemical changes in the liver in carcinogenesis. Tables 2; references 5: 4 Russian, 1 Western.

USSR UDC 615.451.3.015

ADHESIVE AND BACTERIOSTATIC PROPERTIES OF GLUE COMPOSITIONS "CYACRYN"

Moscow EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA in Russian No 6, Nov/Dec 76 pp 63-65

YAMPOL'SKAYA, POLYAKOVA, A. M., ABRABOV, Z. A., DOROZHKOVA, I. R., MAKAREVICH, N. M., MAGER, K. YA., and SELYANTSEVA, V. N., Central Scientific Research Institute of Tuberculosis, Ministry of Health USSR: Institute of Hetero-Organic Compounds, Academy of Sciences USSR, Moscow

[Text-English language abstract supplied by authors] The authors have already found a large bacteriostatic activity of alkylcyanaceteates. They have studied their addition to the cyancrylate body tissue glue, their adhesive properties in experiment, and the bacteriostatic activity of cyanocrylate compositions based on ethyl-alpha-cyancrylate, containing also ethyl and propyl cyanoacetates plus a plasticizing addition N-135. The glue compositions studied cause necrobiosis, chronic pneumonia and inflammation of the visceral pleura. They do not help formation of the scar, and can not be used as glue compositions in clinical practice. No references.

USSR UDC 576.851.553.097.29:577.2

RECENT INFORMATION ON THE MOLECULAR STRUCTURE OF CL. BOTULINUM TYPES E AND F

Moscow ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 12, 1976 signed to press 2 Feb 76 pp 22-28

ISPOLATOVSKAYA, M. V., and RESHETNIKOVA, L. N., Institute of Epidemiology and Microbiology imeni Galameya Academy of Medical Sciences USSR, Moscow

[Abstract] Elucidation of the structural and functional characteristics of the toxic protein constituting C. botulinum toxins may furnish insight to the severity of the food poisonings they cause. This review of the experiments, conclusions, and hypotheses published by Soviet and foreign investigators during the last 15 years touches on the following aspects of the problem: activation of type E toxin by various proteolytic enzymes and theories concerning the mechanism of enzymic activation of the progenitor of the toxin, structure of the toxin, common antigenic and immunogenic activity of the toxin and its progenitor, purification and various molecular forms of the toxic protein of C. botulinum type E, progenitor of type F toxin, purification of the toxin, presence of tryptophan in its molecule, functional groups responsible for the biological activity of botulinus toxins, size of the molecule, and attempts at obtaining toxin with a low molecular weight.

USSR UDC 615.916:546.34).092:616.61

THE ROLE OF THE KIDNEYS IN THE PATHOGENESIS OF LITHIUM INTOXICATION

Moscow BYULETTEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 12, Dec 76 signed to press 11 Jun 76 pp 1426-1428

YAVORSKIY, A. N., GORYANOV, O. A., RYCHKO, A. V., and SAMOYLOV, N. N., Laboratory of General Pharmacology, Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

[Text-English language abstract supplied by authors] Lithium intoxication was induced in rats by intraperitoneal administration of lithium chloride in a daily dose of 200 mg/kg (0.22 LD_{50}) for 6 days. Polyuria connected with pathological changes in the epithelium of the convoluted tubules and depression of the antidiuretic hormone--acid mucopolysaccharides system in the area of the straight kidney tubules was observed on the 6th day of the experiments. Oligouria and death of some of the animals on the 7th experimental day was caused by severe lesions of the kidney structure. Further observation (30 days) demonstrated that, along with the regeneration processes, there developed a marked sclerosing of the kidney tissue. A conclusion was drawn that severe lithium intoxication was associated with the development of acute renal insufficiency. Functional reserves of the kidneys after the cessation of lithium chloride administration remained lowered for a long period. References 10: 6 Russian, 4 Western.

YUGOSLAVIA

OCCUPATION AND PHYSICAL LOAD AS RISK FACTORS IN THE PREVALENCE OF DEGENERATIVE DISESASES OF JOINT AND SPINE

Zagreb ARHIV ZA HIGIJENU RADA I TOKSIKOLOGIYU in Serbo-Croat Vol 27 No 3, 1976 signed to press 15 Apr 76 pp 203-215

KRAPAC, L., and MIMICA, M., Institute for Medical Research and Occupational Health, Academy of Sciences and Arts, SFR Yugoslavia, Zagreb

[Text-English summary supplied by authors] The prevalence of degenerative rheumatic diseases of the spine and joints was studied in a population sample aged 35-57 years. The sample consisted of 1624 men and 1745 women from the communities of several continental and coastal towns. The diagnosis was based on subjective symptoms and objective signs observed at detailed clinical examination of the bone joint system. Clinically determined osteoarthritic changes were graded from 1 to 5. Congenital malformations with static disturbances and posttraumatic conditions were also recorded. Data about the present, past and part time occupation or hobby, posture of the body at work and physical load at work were collected. A possible association between occupation, physical load and unfavorable posture of the body at work and occurrence of degenerative rheumatic diseases of the spine and joints was analyzed by means of the computer. No pronounced connection between occupation and osteoarthrosis was found which points out that with average physical loads the rate of degenerative diseases of joints and spine is not likely to be greatly increased. Still, more often than in the average population, degenerative changes of the spine and joints were observed in farmers, pensioners, housewives and unskilled workers of both sexes. In female subjects osteoarthrosis of the spine was more often found among office workers with intermediate specialist's training. Similar data were obtained by analysis of the past and part time occupations. In men and women whose job requires walking posture and load carrying we found more degenerative rheumatic diseases of the joints than in other population groups. Tables 6; references 26: 9 Serbo-Croat, 1 Czech, 16 Western.

USSR UDC 612.453:612.647).014.464

PECULIARITIES ATTENDING THE GROWTH AND FUNCTIONAL ACTIVITY OF THE ADRENAL CORTEX OF FETUSES UNDER CONDITIONS OF THE ACTION OF HYPOXIC AND HYPEROXIC EXPOSURES

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 12, Dec 76 signed to press 17 Dec 75 pp 1428-1429

NEMETS, M. G., and TARASOVA, I. S., Laboratory of Growth and Comparative Pathophysiology, Institute of General Pathology and Pathological Physiology, Academy of Sciences USSR, Moscow; Department of Histology and Embryology, Chelyabinsk Medical Institute

[Text-English language abstract supplied by authors] A study was made of lipid, cholesterol, and ascorbic acid content in the adrenal cortex of rabbit fetuses developing under conditions of normal pregnancy and under the action of hypoxic and hyperoxic exposures during the third trimester. It appeared that in normal pregnancy the adrenal cortex was activated, this being associated with the adaptive motor reactions of the developing fetus. The action of moderate hypoxic exposures led to a greater activation of the adrenal cortex, this being expressed in a marked fall of lipid, cholesterol and ascorbic acid content. The weight of the total muscle mass and of the fetuses increased as a whole. The adrenal cortex became disactivated under conditions of the hyperoxic exposures; this is expressed in a marked increase in the content of the mentioned formations. The weight of the total mass and of the fetuses decreases. Table 1; references 7: 6 Russian, 1 Western.

USSR UDC 599.323.4 Mus:591.34

THE OLFACTORY RESPONSES OF THE HOUSE MICE (MUS MUSCULUS)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 55 No 11, Nov 76 pp 1710-1714

SOKOLOV, V. YE., SKURAT, L. N., and KOTENKOVA, YE. V., Institute of Evolution Morphology and Ecology of Animals, Academy of Sciences USSR; Moscow State University

[Abstract] The olfactory responses of wild (80) and house mice (54 animals) to litter, urine, excrements and vaginal secretions were studied in the course of 400 experiments under laboratory conditions. Results indicated that the olfactory sense plays a leading role in the social orientation of animals, recognition of sexes, individuals belonging to the same groups, males and females. With the exception of excrements, all other sources of odor contained some substances that provided the needed information. Male mice were able to distinguish different periods of the estrous cycle in females from vaginal secretions. Urine and litter were best sources for identification of males and females. Tables 5; references 16: 3 Russian, 13 Western.

USSR UDC 616.8-009.86-039.31-07:116.839-07

STATUS OF CIRCADIAN ORGANIZATION OF THE ACTIVITIES OF THE VEGETATIVE NERVOUS SYSTEM IN PATIENTS SUFFERING FROM VEGETATIVE AND VASCULAR CRISES

Moscow SOVETSKAYA MEDITSINA in Russian No 11, Nov 76 signed to press 31 Mar 76 pp 3-6

VEYN, A. M., SOLOV'YEVA, A. D., and GORDIYENKO, A. F., First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] The state of circadian activity in 27 patients suffering from neurosis (24) and from hypothalamus syndrome (3) was studied during different day hours between crises. A disorder in the circadian activity of the vegetative nervous system was observed with respect to the initial vegetative tonicity, vegetative responses and vegetative activity maintenance. Disorders in the vegetative indicators occurring during intercrisis periods when the spontaneous vegetative crises usually take place are good indicative signs of disturbances in the circadian rhythms with respect to activities of the vegetative nervous sytem. Changes in the initial vegetative tonicity and vegetative responses play a leading role in these crises. The circadian activity of the vegetative nervous system is accompanied usually by interrelated changes between trophic and ergotrophic systems, with a predominance in the activity of the ergotrophic systems. Disturbances in the circadian rhythm also appear in systems regulating the body temperature and the concentration of the chromatin-containing cells. A combination of the above disorders with emotional disturbances underlines the importance of negative emotions in disturbances of the biological rhythms with respect to activities of the vegetative nervous systems. Figures 3; references 20: 16 Russian, 4 Western.

USSR UDC 612.014.42-71

DEVICE FOR REGISTERING MICROPHONIC RESPONSES OF THE COCHLEA OF ANIMALS AND MAN

Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY in Russian No 6, Nov/Dec 76 pp 91-93

GYULLING, E. V., PERVACHENKO, V. S., and BAKAY, E. A., Kiev Scientific Research Institute of Otolaryngology (A. I. Tsyganov, M. D., director)

[Abstract] In the pathology of peripheral formations of the auditory analyzer the considerable advantages of objective audiometry over widely used subjective estimation have been established. However the introduction of the promising electrophysiological method of studying the functions of the cochlea in experimental and clinical practice is hindered by the need, in leading out the potentials of the peripheral structures of the analyzer, to

have access to the middle ear cavity. To eliminate this difficulty a device has been designed which makes it possible to register a cochleogram of animals and man by means of electrodes implanted in the region of the external auditory meatus. Experiments have shown that with the device the cochleal potentials can be registered in animals from the external wall and mucous membrane of the bulla without disturbing the integrity of the middle ear, which makes it possible to study the functional state of the peripheral section of the acoustic analyzer in the norm and in the modeling of various pathological processes while preserving the natural electroacoustic parameters of the external and middle ear. The proposed method makes it possible to register also the potentials of the cochlea of man both in the norm and in pathology without operational access to the middle ear cavity and without puncturing the tympanic membrane. References 21: 1 Russian, 20 Western.

USSR UDC 612.58

WORKING CAPACITY OF SKELETAL MUSCLES AND MUSCULAR ENERGETICS IN PROLONGED ADAPTATION TO COLD

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA in Russian Vol 62 No 11, Nov 76 signed to press 26 Apr 76 pp 1698-1702

TKACHENKO, YE. YA., YAKIMENKO, M. A., and IVANOV, K. P., Laboratory of Thermoregulation (M. A. Yakimenko, head), Institute of Clinical and Experimental Medicine, Siberian Branch Academy of Medical Sciences USSR, Novosibirsk, and Laboratory of Thermoregulation (K. P. Ivanov, head), Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] The influence of long adaptation to cold and the administration of noradrenalin on the working capacity of the skeletal muscles of rats and the energetics of muscular work was investigated. It was found that after adaptation to cold the force of muscular contraction and working capacity of the skeletal muscle were reduced. However, the muscle of rats adapted to cold is capable of preserving theinitial force of contraction for a longer time. The muscular work of animals adapted to cold involves greater energy expenditures than of control rats. The changes of the working properties of the skeletal muscles of the control animals after administration of noradrenalin are similar to those occurring during cold adaptation. Figures 2; table 1; references 16: 12 Russian, 4 Western.

USSR/HUNGARY UDC 615.471:616.073.916

MNIRRI GAMMA PROFILE SCANNER

Moscow MEDITSINSKAYA RADIOLOGIYA in Russian Vol 21 No 12, Dec 76 signed to press 2 Apr 76 pp 40-44

ZUBOVSKIY, G. I., DEVISHEY, M. I., and TURAYEV, R. N., Moscow Scientific Research Roentgen-Radiological Institute

[Text-English language abstract supplied by authors. Note, MNIRRI in title are the initials of authors' institute] The article presents the description of a new radiodiagnostic instrument, developed by the Moscow Research X-ray Radiological Institute and "Gamma" firm (Hungary) for determining the distribution of radioactive gamma-radiating preparation. The article gives the description of the main technical characteristics of the instrument including the specifications of sensitivity and resolving power. The presented studies open up possibilities for using the instrument for some clinical investigations. The article gives recommendations for a possible use of the instrument under clinical conditions. Figures 10; table 1; references: none.

USSR UDC 576.312.36:633.16

DEPENDENCE OF THE FREQUENCY OF CHROMOSOME ABERRATIONS AND VISIBLE MUTATIONS ON THE DOSE OF BETA-IRRADIATION OF BARLEY PLANTS

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 10 Nov 75 pp 32-39

KAL'CHENKO, V. A., PRISTER, B. S., POLYAKOVA, V. I., and SHEVCHENKO, V. A., Institute of General Genetics, Academy of Sciences USSR, Moscow 117312

[Abstract] One of the important criteria for standardization of levels of radioactive contamination of the environment is the biological effect of radiation on natural plant communities and on the seeds of cultivated plants. Study of the dose-effect dependency, by a radiobiological, and, especially, a genetic test, is of scientific and practical interest for decreasing radiation damage to plants, for prognostication of the consequences of penetration of radioisotopes into the biosphere, and for establishing the limits of radiation doses of biogeocenoses. Citing the availability of data on gamma-irradiation, the authors have studied the cytogenetic effects of beta-irradiation on barley at various stages of ontogenesis. Seeds of barley (Mayya sort) were subjected to an extra-root exposure to a γ-90 solution (T1/2 = 64 hr; E_β = 0.9 Mev). It was found that the frequency of chromosome aberrations in meiosis is a function of the size of the absorbed dose. A negative, correlational association exists between frequency of chromosome aberrations in A1 meiosis, survivability, and yield of plants; the frequency of aberrations at this stage can be used as a quantitative assessment of radiation damage. With irradiation of vegetating barley plants, an increase in appearance of chlorophyll mutations is seen, predominantly of the albina, ranta, and viridis types independent of the ontogenetic phase or radiation dose. The greatest yield of viable, morphological mutations is seen with irradiation of barley plants immediately before meiosis, i.e., prior to fertilization, and with doses not exceeding 3-5 kr. Higher doses increase frequency of appearance of lethal disruptions which eliminate the viable mutations. Figures 2; tables 5; references 18: 10 Russian, 8 Western.

USSR

UDC 577.391:581.526.3

UPTAKE OF STRONTIUM-90 BY FRESHWATER PLANTS IN PONDS AND RESERVOIRS OF THE UKRAINIAN STEPPE ZONE

Kiev GIDROBIOLOGICHESKIY ZHURNAL in Russian No 6, 1976 signed to press 4 Oct 75 pp 76-80

MURZINA, T. A., LUBYANOV, I. P., deceased, and CHAPLINA, A. M., Institute of Biology, Dnepropetrovsk State University

[Abstract] The increasing radioactive pollution of continental and marine waters makes it necessary to run detailed studies on the patterns of accumulation, migration, and distribution of radionuclides in elements of aquatic biocenoses. Freshwater lakes and streams of the Ukraine have been scarcely investigated in this respect. Analysis of 20 of the commonest species and subspecies of aquatic plants taken from 5 reservoirs and ponds in the Ukrainian steppe zone showed that the concentrations of Sr^{90} in the plants was 10 to 100 times higher than in the water. The rate of uptake varied with the species and ecological characteristics of the individual plants (for example, they were much higher in the submerged plants than in the semisubmerged ones), season (the rate increased from spring to summer due to rapid growth and intensified metabolism, and decreased sharply in fall), and amount of calcium in the water (the higher the concentration, the lower the rate of uptake). The highest rates of Sr^{90} uptake were found in the submerged Chara (18 times higher than in the other species), Potamogeton perfoliatus and Myriophyllum spicatum (12.5 times higher). Hence these plants can be used as biological indicators of strontium pollution. Tables 2; references 13: 12 Russian, 1 Western.

USSR UDC 615.38:612.644.14

THE EFFECT OF BLOOD EXCHANGE ON SOME METABOLIC INDICES OF THE SKELETAL MUSCLE

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 12, Dec 76 signed to press 8 Jun 76 pp 1423-1424

SKOVRONSKAYA, YE. V., Institute of Hematology and Blood Transfusion, Lvov

[Text-English language abstract supplied by author] In 85% blood exchange in healthy dogs and also in animals under conditions of hemotransfusion shock a study was made of the nitrogen fraction contents, and the activity of aspartic and alanine transferases in the skeletal muscle in the course of 7 days. Blood exchange in hemotransfusion shock was highly effective. However, the process of "washing out" of the non-protein substances from the tissue in these animals was considerably lowered in comparison with that in healthy animals. Table 1; references 13: 9 Russian, 4 Western.

USSR UDC 615.361.018.46.013

PREPARATION AND TRANSPLANTATION OF HEMOPOIETIC FETAL TISSUE PRESERVED AT -196°

Moscow PROBLEMY GEMATOLOGII I PERELIVANIYA KROVI in Russian Vol 21 No 12, Dec 76 signed to press 30 May 75 pp 20-23

SIMONOVA, L. I., SHANTYR', V. I., MOROZOV, I. A., LAKIZA, B. S., TRUNOV, N. P., KONONOV, YU. V., and PROSHKIN, V. S., Institute of Problems of Cryogenic Biology and Medicine (Professor N. S. Pushkar', director), Khar'kov, Khar'kov Institute of Medical Radiology (Professor V. I. Shantyr', director), Ministry of Health, Ukrainian SSR and Khar'kov Oblast Blood Transfusion Station (N. P. Trunov, head physician)

[Abstract] The attention of investigators toward study of questions connected with the obtaining, preservation and transplantation of embryonal tissue is explained by its great tolerance with respect to tissues of a recipient in view of its immunological immaturity. The article presents the results of experimental and clinical investigations of the obtaining, preservation and transplantation of fetal hemopoietic tissue. The investigations showed the high effectiveness of transplantations of bone marrow of fetuses, which indicates the advisability of using a combined procedure to obtain hemopoietic tissue of fetuses, with subsequent preservation at -196°. References 3 (Russian).

USSR UDC 618.1-089.168-089.584

ELECTROANALGESIA FOR GYNECOLOGIC PATIENTS AFTER SURGERY

Moscow MEDITSINSKAYA SESTRA in Russian No 11, Nov 76 pp 21-24

RASSTRIGIN, N. N.

[Abstract] In order to relieve the pain and to eliminate undesirable side effects of large dosages of pain-killing drugs, the author used square electric pulses of 130-160 Hz (ES-2 device) and 160-1000 Hz (Elektronarkon-1), with an average current strength of 1.5-2 μA, to treat 250 postoperative patients. The desirable electroanalgesia was achieved usually during the first 15-20 min. when the pulse, arterial blood pressure and respiration became stabilized. In severe cases, uninterrupted electroanalgesia could be continued for 4-5 hr, and it can be repeated after 1-2 hr of interruption. Optimal parameters of the current are selected individually for each patient for the elimination of pain. In 8-10 hr after surgery and electroanalgesia, small dosages of analgesics can be administered. Three distinctive stages take place during electroanalgesia: (I) a gradual decrease of pain and its complete disappearance after the application of the pulsing current; (II) a light sleep which takes place after the current is turned off (lasts for 1-2 hr); and (III) the period of increased activity, cheerfulness and an overall well being. No references.

GDR

STUDIES ON FEED VALUES OF ANIMAL EXCREMENTS

Berlin VETERINAER-MEDIZIN in German Vol 31 No 24, 15 Dec 76 signed to press 26 Jan 76 pp 948-955

GLACHOWSKY, G., LOEHNERT, H.-J., JEROCH, H., and HENNIG, A., Section for Animal Production and Veterinary Medicine, Karl Marx University, Leipzig; Group of Experts in Animal Nutrition, Jena

[Text-English language abstract supplied by authors] The nutritional content and digestibility of animal excrements depend on species, age, feeding, litter material, keeping conditions, demanuring, procedures of solid-liquid separation of liquid manure, and other factors. Concentrations of ash and crude fiber in excrements are higher than those in feedstuff. Feces, excrements, deep litter, and liquid manure solids should be used preferably for feeding fattening cattle. The feed value of feces and excrements is higher than that of liquid manure solids. For ruminant feeding excrement feed values follow this order: excrements litter of young fowl, deep of young fowl, feces of swine, excrements of laying hens, solids of liquid manure obtained from pigsties and laying-hen houses, excrements of cattle. Aerobic preparation of liquid manure may yield high-nitrogen and high-ash by-products, such as yeast, biomass, and algae. Further study is required into the feed values and applications of products obtained in the preparation of liquid manure. Figure 2; tables 15; references 82.

HUNGARY

TESTING OF DERTIL INJ. FOR VET. USE ON CATTLE AFFECTED WITH FASCIOLOSIS

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 12, Dec 76 signed to press 18 Jun 76 pp 763-765

KOBULEJ, T., and UDVARHELYI, J., Budapest

[Text-English language abstract supplied by authors] A Hungarian injectable preparation containing nicolofolan as active substance (Dertil inj.) was tested on 101 Fasciola infested cattle. Its efficacy checked by fecal tests was 96.7%. No adverse effect, general or local, following the application was seen. Though still to be determined completely, the safety index of Dertil inj. has been acceptable (about 2.5-3), and seems higher than the parenterally applicable fasciolicids with comparable efficacy. The use of injectable preparation with 2-4% active substance injected into the neck muscle in a dose of 1 mg/kg (25 resp. 12.5 ml to a 500 kg cattle) is recommmended for the Dertil tablets available now on the market, because its application is wearisome and not reliable. Table 1; references 12: 7 Hungarian, 5 Western.

HUNGARY

SHIPPING FEVER IN AN IMPORTED HOLSTEIN HEIFER STOCK

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 12, Dec 76 signed to press 2 Aug 76 pp 767-772

KEGL, Tamas, Dr., Veszprem

[Text-English language abstract supplied by author] Twenty-one cases of shipping fever in a stock of 393 imported Holstein heifers have been reported. The outbreak started shortly after their arrival. The disease was characterized by a sudden onset, marked dullness, forced respiration, often with feverish temperature elevation, less frequently nasal discharge, nasal bleeding, diarrhea, conjunctivitis, and one heifer died. Twenty heifers, however, recovered in 12-16 days after having been treated mainly with Spectam (spectinomycin), in some cases with Chlorocid (chloramphenicol). The treatment proved particularly effective, when Spectam was given twice a day in the first 2 days of the disease, and was followed by giving a single daily dose as long as 2-3 days after their complete recovery. A strong relationship was found between the severity and frequency of the disease and how long the shipment lasted: the less time it took to ship the heifers from the places they had been collected the more animals became affected, and the more severe symptoms they showed. As a consequence, resting of the stocks for 1-2 weeks after their collection and before an intercontinental shipping is strongly recommended. The author also thinks it likely that further incidences may be counted on even without any severe stress effect namely intercontinental shipping. Figure 1; no references.

HUNGARY

CONTROL OF AN EPIDEMIC-LIKE OUTBREAK OF FOWL CHOLERA BY USING SUPHONAMID-TRIMETHOPRIME COMBINATIONS

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 12, Dec 76 signed to press 16 Mar 76 pp 781-784

ROMVARY, A., dr., S. HORVAY, M., dr., MAGYAR, K., dr., and GYENES, J., dr., Budapest

[Text-English language abstract supplied by authors] The efficacy of various therapeutical treatments of fowl cholera outbreaks in 134,095 birds in 16 flocks has been evaluated on the ground of the losses. Potentiated sulfonamids were substituted for the now hardly effective oral or subcutaneous sulphaquinoxaline (SQ) therapy used so far. On the ground of the treatments it can be stated that the suphonamid-trimethoprime (TMP) combinations are effective in controlling fowl cholera outbreaks caused even by SQ resistant pasteurellae. Favorable results were reached by giving Sulfotrim powder (sulphachlorpyridazine-sodium + TMP) in a dose of 40/mg/kg for 6-8 days,

the curing effect of which is modest on the starting day, but is very effective afterwards. Neoszukvin inj. (sulphamethoxazole + TMP) applied once in a dose of 60/mg/kg cut short acute fowl cholera in a short time, and extends its action 8-10 days following application. Figure 1; tables 3; references 20: 14 Hungarian, 6 Western.

USSR UDC 575.2.312.342.36

SPECIFICITY OF RADIATION AND CHEMICAL MUTAGENESIS AT THE CELLULAR LEVEL IN SWINE

Kiev TSITOLOGIYA I GENETIKA in Russian No 6, 1976 signed to press 5 Apr 76 pp 539-545

GOL'DMAN, I. L., KRASOTA, V. F., and VASILEVA, S. F., All-Union Scientific Research Institute of Livestock Breeding, Dubrovitsy, Moscow Oblast

[Abstract] Numerous chromosome breaks were induced in bone marrow cells of piglets by X irradiation and treatment with the chemical mutagen Dipine [tetraethyleneimido-piperazine-NN'-diphosphoric acid]. However, the specific distribution of the breaks depended on the agent used. For example, after X irradiation, the portion of the first pair of chromosomes near the centromere was affected in the long arm, whereas after treatment with Dipine it was affected in the short arm. Irradiation induced multiple breaks in the centomere of the second pair of chromosomes, whereas Dipine did not have this effect. There were also differences in the frequency of breaks in other portions of the chromosome pairs studied. The species specificity of the cytogenetic response to the two mutagens used was demonstrated by the similar correlation of intra- and inter-chromosomal aberrations and types of aberrations within these classes. Figures 7; table 1; references 2: 1 Russian, 1 Western.

USSR

SHOP FOR PRODUCTION OF AMIDO-CONCENTRATE FODDER ADDITIVES

Moscow SEL'SKOYE STROITEL'STVO in Russian No 10 (324), Oct 76 p 7

SHIGIN, I., director, Institute of the Central Chernozem Regions All-Union State Institute for the Planning of Industrial Buildings and Structures for Agriculture, and PEREL'MAN, V., chief, Section of Mechanical Technology of the Institute

[Abstract] Amido-concentrates are new additives to the fodder of ruminants consisting of a finely ground and well-mixed combination of 70-75% grain, 20-25% urea and 5% sodium bentonite. The mixture is passed through an extruder in which a temperature of 145-150° and a pressure of 12-15 atmospheres are assured. The institute has designed a production shop with a capacity of 15 tons per shift at the order of the Voronezh Oblast Administration of Agriculture. The technological process of amido-concentrate production includes the reception and cleaning of grain, the reception of urea, bentonite and trace additives and their pre-mixing, the metering and mixing of components, the grinding and extrusion of the mixture, the cooling of the

obtained concentrate, grinding it to a particle size of 4-6 mm, and storage and issuance of the finished product. The shop is 13.5 x 30 meters in size and the auxiliary room is 13.5 x 12 meters. The building is designed for construction in regions with a winter outside air temperature of -25°, a snow-cover weight of 100 kg/m^2 and a wind velocity head of 35 kg/m^2. Its estimated cost is 164,800 rubles and the capital investment is repaid in 14 months. Storage of 3200-6400 tons of grain and 500-600 tons of urea and bentonite is provided for. The institute has also designed a shop with an output of 5 tons per shift.

USSR

UDC 612.885.048

PHYSIOLOGY OF SENSORY SYSTEMS. PART III. PHYSIOLOGY OF MECHANORECEPTORS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA Vol 62 No 11, Nov 76 signed to press 22 Jun 76 pp 1732-1733

YESAKOV, A. I., Moscow

[Review of book, "Fiziologiya sensornykh sistem. Chast' Tret'ya. Fiziologiya mekhanoretseptorov," by O. B. Il'inskiy]

[Excerpts] First a structural characterization is given of relatively simply organized mechanosensitive formations of vertebrates--the skin, internal organs and locomotor apparatus, and then of complexly constructed formations of the acousticolateral and vestibular apparatus. A definite place is given to the structural and, in the subsequent account, the functional organization of specialized apparatus of mechanoreception in vertebrates. Questions devoted to the physiological properties of mechanoreceptors are analyzed in very great detail. Considerable space is given to the analysis of processes of adaptation and mechanisms of the regulation of activity of the mechanoreceptors of various sensory systems. Attention is attracted by sections devoted to the role of the physicochemical surroundings of mechanoreceptors and biologically active substances contained in receptors and auxiliary structures, and also the effect of various physical and chemical factors on mechanoreceptor formations. An analysis is made of the importance of the direction of the acting stimulus in the process of excitation and mechanisms of directional sensitivity of receptors. Questions of the establishment of the specific sensitivity of receptors in the process of their morphogenesis and regenerative changes find a definite place in the book. In the concluding chapter the author makes a successful attempt to generalize the results obtained from vertebrates and invertebrates in order to derive certain general principles of the functioning of various mechanoreceptors. The publication of such a summary of contemporary materials, created on the basis of the research of the author and the collective of his co-workers and a qualified survey of over 2000 literature sources, is important and timely and will benefit specialists working in various areas of physiology.

USSR

BIOACOUSTICS

Moscow BIOAKUSTIKA in Russian "Vysshaya Shkola" 1975 p 2 p 256

[Book by Valeriy Dmitriyevich Il'yichev, Boris Dmitriyevich Vasil'yev, Rustam Devletovich Zhantiyev, Vladimir Rustamovich Protasov, Yevgeniy Vasil'yevich Romanenko and Gennadiy Nikolayevich Simkin. Edited by V. D. Il'yichev. A textbook for students in biological specialties. 257 pp with illustrations. Bibliography pp 254-257]

[Excerpt] "Bioacoustics" is the world's first experience in creating a textbook in a new region of biology at the juncture of physics, linguistics and mathematics. Bioacoustic methods are used widely in systematics, theory of evolution, population ecology and zoogeography. One of the sections of bioacoustics involves the study of location mechanisms of animals. Acoustic repellants used to control animals' behavior have extensive practical significance.

The extensive factual material in this book may be useful for zoologists of different specialties, physiologists and biophysicists involved in the study of the voice and sound of animals and practical workers engaged in engineering modelling of bioacoustic systems and acoustic repellants.

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BIOACOUSTICS

Moscow BIOAKUSTIKA in Russian "Vysshaya Shkola" 1975 pp 63-84

[Book by Valeriy Dmitriyevich Il'yichev, Boris Dmitriyevich Vasil'yev, Rustam Devletovich Zhantiyev, Vladimir Rustamovich Protasov, Yevgeniy Vasil'yevich Romanenko and Gennadiy Nikolayevich Simkin]

[Abstract] Chapter 4, entitled "Acoustic Orientation of Fish" describes the sounds of fish associated with movement, gas exchange and feeding and sounds emitted by the stridulation organs and by the swimming bladder. Several species of fish are discussed. Acoustic activity of fish in dependence upon the time of year, time of day and condition of the fish is discussed. Sound perception of various species is also discussed in considerable detail. It was concluded that fish have the capacity to perceive low frequency sounds given off by the swimming bladder and arising during movement. Stridulation sound may be perceived only by fish having Weberian apparatuses. Other bladderless fish may perceive low frequency components but not the whole range of sounds. 14 Illustrations.

USSR

URGENT NECESSITY

Alma-Ata PARTIYNAYA ZHIZN' KAZAKHSTANA in Russian No 11, Nov 76 pp 78-79

ZHARYKBAYEV, K., candidate of psychological sciences, LOGINOVA, N., candidate of psychological sciences, and OL'KHOVIK, G.

[Abstract] The increasing role of the subjective personality factor in all walks of life enhances the prestige of social psychology -- the science that studies public opinion, psychological climate and the like. The study of human relations is an important topic reflected in the writings of Kazakhstan scientists. Different areas of research can be distinguished: 1. sociopsychological aspects of collective management (N. Feliforov, "The Sociopsychological Aspect of Management"); 2. national psychology (N. Dzhandil'din, "The Nature of National Psychology"); 3. psychology of religion (V. G. Yakovlev, "The Inner World of the Believer").

Alma-Ata, Tselinograd and Chimkent have societies of psychologists and have hosted conferences on different aspects of social psychology. The psychology sector of the Scientific Research Institute of Pedagogy imeni I. Altynsarin is doing research at present in Kazakhstan in the area of psychology in combined departments of two universities and 23 pedagogical institutes. Plans have been made to open a division on training psychologists at Kazakh State University. Implementation of planned measures should help in the solution of problems of training, selection and placement of personnel, formation and development of labor collectives, material and moral incentive and Communist education of workers, especially the youth.

YUGOSLAVIA

PSYCHOPHYSIOLOGICAL ABILITIES OF OPERATORS DURING WORK

Zagreb ARHIV ZA HIGIJENU RADA I TOKSIKOLOGIYU in Serbo-Croat Vol 27 No 3, 1976 signed to press 17 Nov 75 pp 191-201

MILOSEVIC, S., MILOSAVLJEVIC, Z., and SAVIC, S., Institute of Occupational and Radiological Health, Belgrade

[Text-English summary supplied by authors] Psychophysiological abilities of a group of operators working at a control panel in a power station were tested. The test battery included biochemical tests (adrenaline, noradrenaline and 17-OHCS), physiological test (arterial blood pressure), visual tests (accomodation, convergence, phoria and dark adaptation), psychological tests (visual and auditive reaction time) and subjective estimation of fatigue. Workers from three different work shifts, with a constant change of the shift system every two days, were tested before and after work (at 6 a.m. and at 2 and 10 p.m.). Characteristic changes were found after work in all the three shifts, but the changes were significant only after work in the night shift. A significant change in adaptation to dark was also noticed after work in the afternoon shift. A lack of sleep and night work increased arterial blood pressure, and prolonged the period of adaptation to dark. They also increased variability of auditive time reaction and the feeling of fatigue. The accommodation rate was decreased. Figures 9; references 9 (Western).

USSR/GDR UDC 591.158:591.51

PROBLEMS OF STRESS GENETICS. I. GENETIC ANALYSIS OF MICE BEHAVIOR IN STRESSFUL SITUATION

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 26 Jan 76 pp 62-71

BORODIN, P. M., SCHUELER, L., and BELYAYEV, D. K., Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR; Animal Breeding Center, Academy of Agricultural Sciences GDR, Dummerstorff-Rostock

[Text-English language abstract supplied by authors] Behavior of progeny of complete diallel crossing between 4 inbred strains of mice (BALB/c, CeH/He, C57BL/6, AKR/J) in a stressful situation was studied. As a model of stressful situation, the open field test was used. A statistically significant influence of genotype on the variability of the behavior characteristics is found. On the basis of analysis of general combining ability of the strains, a hypothesis is made that in the gene pool of BALB/c and C3H/He strains there are concentrated some genes of additive effect, which increase the strength of emotional reactions of mice in a stressful situation, while in the gene pool of C57BL/6 and AKR/J there are genes of opposite effect. An analysis of the specific combining ability demonstrates that an important role in the control of features characterizing the exploratory activity of mice is played by non-additive gene effects, in particular, the effects of over-dominance. Significant genotypic correlations between the rate of sexual maturation of female mice and their behavior in stressful situation were observed. The mice which mature earlier are more reactive to the stressing effect of a strange environment. Figures 2; tables 4; references 22: 6 Russian, 16 Western.

USSR/GDR UDC 591.158:591.147

PROBLEMS OF STRESS GENETICS. II. GENETIC ANALYSIS OF RELATIVE WEIGHT OF ENDOCRINE GLANDS IN NORMAL AND STRESSFUL CONDITIONS

Moscow GENETIKA in Russian Vol 12 No 12, Dec 76 signed to press 26 Jan 76 pp 72-80

SCHUELER, L., BORODIN, P. M., and BELYAYEV, D. K., Animal Breeding Center, Academy of Agricultural Sciences GDR, Dummerstorff-Rostock; Institute of Cytology and Genetics, Siberian Department, Academy of Sciences USSR, Novosibirsk

[Text-English language abstract supplied by authors] Relative weight of adrenals, thymus, hypophysis and gonads was studied in female mice 21 days after parturition and in intact males. One group of females was stressed during pregnancy, and another group was intact. All these animals were a

progeny of the full diallele cross of 4 inbred mice strains (BALB/c, C3H/He, C57BL/6, AKR/J). On the basis of analysis of general and specific combining ability the conclusion is drawn that the relative weight of the endocrine glands is inherited additively in females of both experimental groups. However, it was found that the size of additive genetic variation for these characters in the population of females, which had been stressed during their pregnancy, was larger than in the control population. A significant role of non-additive genes in the determination of these characters was observed in males. The degree of hypertrophy of adrenals and lysis of thymus in stressed females corresponded to their emotional reactivity. Significant genotypic correlations between the weight of some endocrine glands, on one hand, and the emotional reactivity and the rate of sexual maturation, on the other hand, were found in both experimental groups of females. In the stressed group these correlations were higher. Figure 1; tables 4; references 17: 7 Russian, 10 Western.

GDR

USE OF PSYCHOPHARMACEUTICALS FOR THE TREATMENT OF ABNORMAL BEHAVIOR OF OLIGOPHRENIC EPILEPTICS

Leipzig PSYCHIATRIE NEUROLOGIE UND MEDITSINISCHE PSYCHOLOGIE in German Vol 28 No 10, Oct 76 pp 635-640

OETTINGER, Bernt, "Kleinwachau," Evangelic Treatment and Welfare Center for Epileptics, Liegau-Augustusbad

[Text-English language abstract supplied by author] Forty-one patients were treated with promazine, a phenothiazine derivative, for an average of 266 days. The average daily dose was 200 mg. Thirty patients were treated with levomepromazine for an average of 115 days, the daily dose being about 130 mg. The two groups of patients were examined for their contactual, impulsive, and affective behavior before, during, and after treatment. The positive results obtained justify the use of the above-mentioned psychopharmaceuticals for the therapy of abnormal behavior of oligophrenic epileptics. Tables 2; references 17.

CSO: 1840

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