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BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 70

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 70

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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CONCERNING THE REMOTE ACTION OF IONIZING RADIATION IN DOSES THAT STIMULATE PLANT GROWTH

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 19 Oct 76 pp 718-719

KRYUKOVA, L. M., and NAZAROVA, L. F., Institute of Biological Physics, Academy of Sciences USSR, Pushchino, Moscow Oblast

[Abstract] Research is done to determine whether remote action of radiation occurs in small doses that stimulate plant growth. A single leaf of a bean plant was irradiated with 500 r of X-radiation while the remainder of the plant was shielded by 10 mm of lead. Within 24 hours after localized exposure, the stimulating effect of the radiation was observed in mitosis in the meristematic tissues of growth nodes on the stem. If the irradiated leaf was removed immediately after exposure, no stimulating effect was observed in the stem nodes. It is suggested that the remote effect in the case of small doses of ionizing radiation is due to the accumulation of photohormones--gibberellin and kinetin--that transmit the radiation effect. In the case of heavy doses that inhibit growth, the remote action is due to oxidized phenol compounds that suppress growth. Table 1; References 14: 11 Russian, 3 Western.

USSR UDC 551.451.8:517.946

DISSOLUTION AND LEACHING OF SALTS FROM WATER-SATURATED SOILS

Moscow VESTNIK SEL'SKOKHOZYZYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 91-95

VERIGIN, N. N., doctor of agricultural sciences, All-Union Scientific Research Institute for Water Supply, Sewer Systems, Hydraulic Engineering Structures and Engineering Hydrogeology, MASHARIPOV, R., candidate of physical-mathematical sciences, Institute of Cybernetics, Computer Center, Academy of Sciences Uzbek SSR, and SHUL'GIN, D. F., doctor of technical sciences, Kalinin Polytechnical Institute

[Abstract] Desalination of soils is a frequent problem, sometimes performed by flooding earth-banked paddies with fresh water, sometimes with the addition of solvents. The fresh water seeps down through the soil, dissolving, diffusing and leaching the salts into the underlying layers of soil. A mathematical plan is formulated and a computer algorithm designed for calculation of the rate of salt dissolution and leaching from the water-saturated soil, producing as a result a prediction of the solid salt

residue and a prediction of the rate of migration of the leading edge of the salt solution. This allows more precise determination of the salt redistribution dynamics in leached soil and prediction of the salt content of the soil after leaching. Numerical examples are discussed. Table 1; References 6 (Russian).

USSR UDC 634.11+631.542

A NEW TECHNOLOGY FOR CULTIVATION OF APPLES: THE MOWING ("MEADOW") ORCHARD SYSTEM

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 120-126

YAKUSHEV, V. I., Crimean Agricultural Institute

[Abstract] The need has arisen for a basic restudy of the traditional technology of growing of fruit crops, in order to eliminate manual labor from the orchard. The author feels that the most promising solution to the problem of creation of an industrial type orchard is that developed by English scientists and referred to as the "meadow orchard." The author's institute has been studying this method since 1972, and the experiments indicated that it is quite possible, using a two-year cycle of growth of closely planted apple trees, after which the trees are cut down by a combine, the apples are mechanically separated and the wood is ground up and reapplied to the orchard as mulch, to produce yields of 960-1407 cw/ha with $40\text{-}60 \cdot 10^3$ trees planted per ha. Yields are quite dependent on type of plant. Figures 5; Table 1; References 4: 1 Russian, 3 Western.

USSR UDC 626.843+631.54

AERATING TREATMENT OF THE SOD OF IRRIGATED CULTURED PASTURES

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 56-63

BUTS, V. M., and PARANYUSHKINA, V. P., Scientific Research Institute for Agriculture of the Central Regions of the Nonchernozem Zone

[Abstract] The 10th Five-Year Plan calls for an increase in the production of seeds in the nonchernozem zone by creation of highly productive pastures

and improvement of agricultural techniques for the growth of seed crops. A new method has been developed for cultivation of the soddy stratum of irrigated pastures, by cutting notches 2-3 cm wide to the depth of the plowed layer, grinding of the sod, mixing it with the soil and spreading it over the surface as mulch. This cultivation does not disturb the grass cover for the most part, but does improve penetration of air, water and fertilizers to the plant roots for a long period of time. This aerating cultivation technique increases the productivity of pastures by 20 to 25%. The use of a combination of cultivation methods (planting of perennial grasses, application of mineral fertilizers and the aeration treatment described above) lengthens the productive year of irrigated pastures, producing a harvest of $6\text{-}8 \cdot 10^3$ feed units/ha. Aerating treatment of the soddy layer is thus a promising method of cultivation of pastures, capable of reducing the volumetric weight of the soil, improving air and water permeability, increasing the effectiveness of utilization of mineral fertilizers and irrigation water, and the activity of useful soil microflora. Figures 3; Tables 3; References 4 (Russian).

USSR UDC 633.11+631.8+632.51

WINTER WHEAT IN A FIELD CROP ROTATION SYSTEM WITH SYSTEMATIC FERTILIZATION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 40-44

TURCHIN, V. V., MATYUKHA, L. A., and GLADYSH, O. T., candidates of agricultural sciences, All-Union Labor's Red Banner Scientific Research Institute for Corn

[Abstract] A study was made of the Ukraine's leading grain crop--winter wheat--in ordinary low-humus, medium-loam chernozem. Two crop rotation systems were used: black fallow -- winter wheat -- winter wheat and sugar beet -- corn for silate -- winter wheat. The purpose of the study was to develop scientific principles for the use of fertilizers in crop rotation systems. It was found that the use of manure and mineral fertilizers is one of the primary factors for increasing the yield of winter wheat in the Ukraine. Fertilization facilitates more intensive growth and development of the plants, strengthening their competitive ability in the battle against the weeds. In order to obtain the maximum effect of the elements introduced to the soil, the use of fertilizer for winter wheat should be combined with agricultural and chemical measures designed to suppress weed growth, particularly in years when the natural conditions are unfavorable for the growth of winter wheat. Tables 3; References 9: 7 Russian, 2 Western.

USSR UDC 631.41:551.578

NATURE OF SORPTION AND DESORPTION OF TRACE AMOUNTS OF RADIOSTRONTIUM BY PEAT-BOG SOILS

Minsk DOKLADY AKADEMII NAUK BSSR in Russian Vol 21, No 2, Feb 77 signed to press 27 Feb 76 pp 149-151

IVANOV, S. M., associate member of the Academy of Sciences BSSR, SHAGALOVA, E. D., and SHIFRINA, S. S., Belorussian Scientific Research Institute of Soil Science and Agrochemistry

[Abstract] Processes of sorption and desorption of strontium-90 are studied in three types of peat: 1, ligneous peat with an admixture of reeds, the degree of dissociation being 50%, and ash content 19.6%; 2, reed-sedge peat with dissociation of 45% and ash content of 13%; 3, sphagnum and cotton grass peat with dissociation of 15% and ash content of 4.4%. Comparative data are given on desorption of radiostrontium by strontium and calcium chlorides from these peat soils and from sandy loam. Analysis shows that the strontium-90 ions are bound chiefly by exchange absorption in peat-bog soils, in contrast to mineral soils where all the absorbed radioactive strontium is bound in volume form. The rate of desorption of this radionuclide from peat is much slower than from sandy loam. Non-exchange absorption was not observed. References 4 Russian.

USSR UDC 633.31:631.83

EFFECT OF POTASSIUM FERTILIZERS ON CERTAIN PHYSIOLOGICAL INDICES OF ALFALFA

Kiev FIZIOLOGIYA I BIOKHIMIY KUL'TURNYKH RASTENIY in Russian Vol 9, No 1, Jan 77 signed to press 17 Jan 76 pp 68-72

DAUTKULOV, A. D., and ZHEKSEMBIEVA, R. O., Scientific Research Institute of Agriculture imeni V. R. Vil'yams, Ministry of Agriculture Kaz SSR, Alma Ata

[Abstract] Little attention has so far been paid to the use of potassium fertilizers in the irrigable farmland of Southeastern Kazakhstan. This study was concerned with the main aspects of the role which such fertilizers may play in the production of high-yield crops. They were found, specifically, to enhance biosynthesis of chlorophyll in alfalfa leaves and water absorption by alfalfa roots. Transpiration in leaves and the cycle of changes in the water content here were also found to be strongly affected. The tests were carried through three stages of vegetation: stem growth, budding, and flowering. Potassium sulfate, potassium chloride, and 40% potash were

added to plain nitrophosphate fertilizers already present in air-dry soil specimens for a comparative evaluation. They seem to play an overall positive role when used in crop rotation. Tables 5; References 15: (all Russian).

USSR UDC 581.112.0361

WATER ABSORPTION BY PLANTS DURING DROUGHT AND DURING PERIODIC WATER SPRINKLING

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 24, No 1, Jan/Feb 77 pp 188-190
manuscript received 15 Sep 75

YEGOROV, V. G., LEBEDEV, G. V., DUMBADZE, V. Z., and BRYUKVIN, V. G., K. A. Timiryazev Institute of Plant Physiology, USSR Academy of Sciences, Moscow

[Abstract] Dry-wind and sprinkling tests were performed on ripe beans (black Russian grade) and biennial tea in an environmental chamber under precisely controlled conditions. Specimens of these plants had been grown in pots with soil at 26°C containing 15-20% less moisture than in the field, in an atmosphere at 26°C with 70% humidity. Dry wind was generated by an air stream at 43-45°C with 25% humidity, blowing at a velocity of 3-4 m/s for periods ranging from 15 min to 9 h. The rate of water absorption through the plant roots was found to increase by 100% or more during a drought and to stabilize at such a level within 15-20 min. After a wind, the water absorption rate returned to normal. Periodic sprinkling, to simulate rain, caused the rate of water absorption through the plant roots to drop: to normal when sprinkling occurred in 15-min intervals, not quite down to normal when sprinkling occurred in 30-min intervals. The results of this study, graphically presented in terms of water absorption (ml/min) as a function of time (0-12 h), indicate that periodic sprinkling with water ranks among the effective methods of combatting drought. Figures 3; References 2 (Russian).

USSR UDC 581.121.036.5

EFFECT AND AFTEREFFECT OF SUBZERO TEMPERATURES ON THE RESPIRATION OF SUMMER WHEAT

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 24, No 1, Jan/Feb 77 signed to press 13 Oct 75 pp 190-193

BAKUMENKO, N. I., and RUSAKOVA, L. V., Siberian Institute of Plant Physiology and Biochemistry, Siberian Branch of USSR Academy of Sciences, Irkutsk

[Abstract] Respiration of three grades of summer wheat during and after a short exposure to subzero temperatures was studied, and the ability of these plants to recover from a frost stress was evaluated. The tests were performed in a special chamber with air and 60-70% humidity, under an illumination of approximately 200 W/m^2. The respiration rate was measured, in terms of the CO_2 intake, with an infrared gas analyzer at the following temperatures: +20, +15, +10, +5°C and 0, -2, -4, -6, 8°C. The respiration rate was found most critically, but not completely, depressed at -4°C (corresponding to the maximum denaturation of albumen). This depression may be regarded as a result of biochemical reactions as well as structural and functional damage to plant cells during ice formation. The respiration rate recovered at approximately 0°C, but never fully to its original level at 20°C. The degree of depression and the degree of recovery vary from grade to grade, the degree of recovery being a more significant characteristic. On an overall basis, grades Balaganka and Lerma Rozho appear more frost-resistant than grade Skala of summer wheat. Tables 3; References 8: 5 Russian, 3 Western.

USSR UDC 631.17+546.171.1+631.4

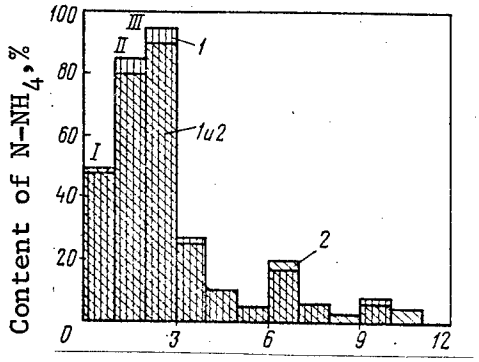
DESIGN OF TOOLS FOR DISTRIBUTION OF LIQUID AMMONIA IN MEADOWS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 96-101

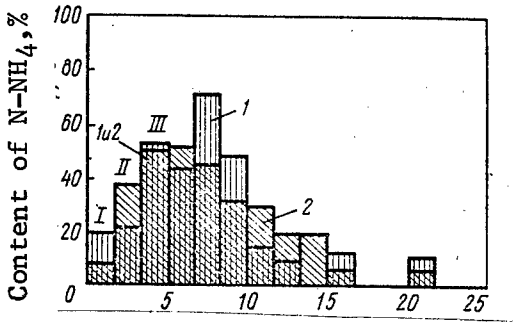
POZHARSKIY, V. K., candidate of technical sciences, SHCHINOV, YU. A., FROLOVA, T. D., and SHCHINOVA, O. V., Central Experimental and Technological Design Laboratory for the Use of Liquid Ammonia and Other Liquid Fertilizers in Agriculture

[Abstract] A study is made of the influence of the design of the cutting tool used to cut a slit into which liquid ammonia is applied on the distribution of the ammonia in the soil. It was assumed that various blades, acting on the soil as the ammonia was applied, would create various conditions for its fixation and distribution to either side of the line

of application and by depth. 3 versions were tried: 1) blade with spiral mole plow plate; 2) blade with flat mole plow plate; 3) blade with no mole plow plate. The figures below present the results of the experiment:



Lateral Ammonia Distribution, cm



Depth Distribution of Ammonia, cm

Influence of Design of Distributor Blades on Lateral Distribution of Ammonia from Line of Application in 1973 (1) and 1974 (2) by Blade Design Versions

Influence of Blade Design on Vertical Ammonia Distribution from Point of Application in 1973 (1) and 1974 (2) by Blade Design Versions

Blade design thus has a significant influence on ammonia distribution in the soil. Blades which produce drains with loose walls have a favorable influence on ammonia distribution in the lateral and vertical directions. The use of these blades in practice allows application of ammonia with the maximum effectiveness when the distance between application lines is 45 cm. Figures 4; References 4.

USSR UDC 577.153.3

ADENOSINE TRIPHOSPHATASE SYSTEM OF ANIMAL CELLS STIMULATED BY HCO_3^- IONS

Moscow BIOLOGICHESKIYE NAUKI in Russian No 1, 1977 signed to press 25 Mar 76 pp 25-33

IVASHCHENKO, A. T., Institute of Experimental Biology, Academy of Sciences Kazakh SSR

[Abstract] This literature review article indicates that ATPase I is present in specialized tissues, the functions of which are related to the liberation of hydrogen ions, as well as cellular structures of variable physiological function and nature of metabolic processes. In all of the tissues studied, a significant degree of anion-sensitive ATPase activity has been manifested. Subcellular fractions, except for the plasmatic membrane, show significantly higher activity of ATPase I than of ATPase II. A comparison is drawn between the properties of ATPase I and the properties of carboxylase (decarboxylase), indicating considerable similarity in the nature of the processes catalyzed by these enzyme systems. It is assumed that ATPase I participates in carboxylation-decarboxylation processes. References 86: 10 Russian, 76 Western.

USSR UDC 5337.155.2

INHIBITION OF CHROMATIN DEOXYRIBONUCLEASE ACTIVITY BY TRANSPORT RNA

Moscow BIOLOGICHESKIYE NAUKI in Russian No 1, 1977 signed to press 25 Jun 76 pp 34-36

VINTER, V. G., GAYNULLINA, F. KH., BAGAYEVA, T. V., and YEL'SKAYA, A. V., Kazan' State University

[Abstract] It is shown that the chromatin deoxyribonuclease activity of the rat liver is inhibited by transport RNA from the same tissue by a mechanism of competitive inhibition. The kinetic constants K_m and K_i are calculated as $0.6 \cdot 10^{-3}$ M and $0.13 \cdot 10^{-3}$ M respectively. Transfer RNA from various sources is identically effective as a DNAase inhibitor. Sources studied included the rat liver, rabbit liver and cow mammary gland. Figure 1; Tables 2; References 14: 8 Russian, 6 Western.

USSR UDC 54-4:591.477:597

THE CHEMICAL NATURE OF THE REPELLANT FROM THE SKIN OF THE MINNOW

Moscow BIOLOGICHESKIYE NAUKI in Russian No 1, 1977 signed to press 10 Mar 76 pp 37-41

KASUMYAN, A. O. and LEBEDEVA, N. YE., Department of Ichthyology, Moscow State University

[Abstract] A study is presented of the chemical nature and properties of the natural repellant from the skin of the minnow Phoxinus phoxinus. It is shown that the repellant is a nonpteroic substance, which does not manifest blue-violet fluorescence and does not absorb ultraviolet light. The repellant substance has a negative charge at pH 8.3. The authors have previously separated the repellant substance into three fractions by gel-chromatography on sephadex G-15. The present work further separated components of fraction II. The repellant activity disappears after 20 minutes of boiling of the second chromatographic fraction, whereas the component which absorbs UV light remains unchanged even after 40 minutes of boiling. Irradiation of fraction II with UV light causes the repellant activity to disappear after 15 minutes, while the substances which absorb the ultraviolet retain activity after 30 minutes of exposure. This indicates that the substances in fraction II, which absorb UV light, do not have any repellant activity. Figures 2; Table 1; References 16: 4 Russian, 12 Western.

USSR UDC 576.858.23

IMMUNOLOGICAL DETECTION OF THE CELLULAR COMPONENT IN THE RNA-POLYMERASE OF THE ENCEPHALOMYOCARDITIS VIRUS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 4, 1977 signed to press 18 Oct 76 pp 949-952

DMITRIYEVA, T. M., SENKEVICH, T. G., KOMISSAROVA, YE. V., and AGOL, V. I., Moscow State University, Institute of Poliomyelitis and Virus Encephalitides

[Abstract] Detailed study made of the Qβ bacteriophage has shown that the replication of the RNA of this virus is accomplished by a complicated multi-component complex containing one virus-specific polypeptide and several proteins of the cell-host. The replication enzymology of the genome of the picornaviruses has hardly been studied at all, by comparison. A number of data suggest that within the composition of RNA-dependent RNA polymerases formed in the cell upon infection with the viruses of poliomyelitis, mengo

and encephalomyocarditis, there is a virus-specific with molecular weight of 56-58 kamu. To determine the possible participation of the cell component in the synthesis of the RNA virus of encephalomyocarditis, the authors adopted the immunological approach. It would be expected that the antibodies obtained against the proteins of an uninfected cell-host would negate the activity of replicative complexes synthesizing the virus RNA; and this assumption was confirmed by the experiments. It was concluded that cell proteins definitely participate in the synthesis of both one-cell and two-cell virus RNA. Figures 2; Table 1; References 7: 1 Russian, 6 Western.

USSR

THE ISOLATION AND TRANSLATION OF PARTIALLY PURIFIED m-RNA CODING CERULOPLASMIN

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 4, 1977 signed to press 15 Nov 76 pp 957-960

NEYFAKH, S. A., GAYTSKHOKI, V. S., KLIMOV, N. A., PUCHKOVA, L. V., SHAVLOVSKIY, M. M., and SHVARTSMAN, A. L., Scientific-Research Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] Ceruloplasmin (CP) is a copper-containing glycoprotein of the α_2 fraction of blood plasma. Disruption of the structure or the synthesis of this protein causes the hereditary Wilson's disease. It was shown in a previous study (M. M. Shavlovskiy, I. M. Vasilets and G. V. Muka, 1975) that the CP of rats is not substantially different from the human variety as regards molecular size, and these animals were used in the present study in isolating and purifying CP - mRNA. Information on the observation, characteristics and translation of m-RNA has thus far not appeared in the scientific literature. The preliminary work consisted of the following: 1) isolation of total polyribosomes (PRS) from the excess fluid of rat liver subjected to lysis with Triton X-100, using precipitation of the PRS with 0.1 M $MgCl_2$ and subsequent purification of the PRS through 2 M saccharose; 2) isolation of CP-synthesized PRS by indirect immunoprecipitation, with rabbit antibodies against rat CP, and by "second" antibodies to rabbit immunoglobulins; 3) obtaining polyribosome RNA from the immunoprecipitate by Rhoads' methods; and 4) isolating the polyA-containing fraction of polyribosome RNA with use of chromatography based on polyU-Cepharose. Analysis of the material obtained showed that the proportional of CP-synthesized PRS, on the basis of indirect immunoprecipitation, was 0.5-0.7% of total PRS of the cytoplasm of rat liver, while the proportion of polyA-containing RNA retained on columns of polyU-cepharose was 0.3-0.7% of the total RNA from the immunoprecipitated PRB. The polyA-containing RNA

isolated from the CP-synthesized PRS was tagged with ^{125}I to a specific radioactivity of 10^5 pulses/min-kg. Almost all of the polyA-containing RNA, following brief roasting with the polyU-containing RNA, was observed within the hybrid fraction by chromatography. The subunitary content of the CP molecule (with molecular weight 130,000 amu) has not been finally explained. It has been suggested, regarding the subunitary structure, that the CP molecule exists in the form of a unique polypeptide chain. The data obtained by the authors in this study correspond to a double subunitary model of CP consisting of polypeptide chains of approximately equal molecular weight. Actually, the length of the m-RNA polynucleotide chains with molecular weight of $1 \cdot 10^6$ amu is sufficient for coding the subunits of a protein with weight of 60- to 65,000 amu. The fact that the translation product obtained had a lower weight (45- to 54,000 amu) can tentatively be explained by the inability of the cellular system to achieve posttranslation modification of the CP chains. It is concluded that the combination of methods used (immunoprecipitation of PRS and chromatography of RNA on polyU-sepharose) offers the possibility of partial purification of an m-RNA preparation programming synthesis of CP polypeptides with molecular weight approximately half that of the native CP. Figures 2; Table 1; References 15: 4 Russian, 11 Western.

USSR

THE FRACTIONATION AND PHYSICAL MAPPING OF THE 4S RNA OF BACTERIOPHAGE T5

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 4, 1977 signed to press 15 Nov 76 pp 953-956

KAZANTSEV, S. I., CHERNOV, A. P., SHLYAPNIKOV, M. G., KRYUKOV, V. M., and BAYEV, A. A., (academician), Institute of the Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR, Pushchino, Moscow Oblast

[Abstract] Many viruses and phages induce significant changes in the translation apparatus of the cell, and these changes have been demonstrated for almost all of the macromolecular components of a protein-synthesizing system. The synthesis of new forms of transfer RNA coded with viruses and phages has been observed; and, in particular, the infection of Escherichia coli with phage T5 leads to the synthesis of at least 16 different phage-specific forms of t-RNA. It is clear that modification of the translation apparatus is in some way tied in with the effectiveness and selectiveness of the synthesis of these virus-specific proteins, but the concrete significance of the facts cited has remained unexplained. As a first step in explaining the functional role of the changes, the authors established the number of 4S RNA coded with the genome of phage T5 and mapped their structural genes. The RNA were derived from a culture of E. Coli F

infected with phage T5, with 15 phage particles per cell. The proportion of uninfected bacteria did not exceed 0.1%. Pulsed tagging was used to observe the phage-specific RNA in the infected culture during the latent period. Specific radioactivity of the RNA preparations obtained was 0.2-0.5 μc/μg. A modification of the method of two-dimensional electrophoresis was used to determine the amount of various 4S RNA. Figures 2; Tables 2; References 15: 1 Russian, 14 Western.

USSR UDC 577.37

POSSIBILITY OF SELF-REGULATION OF THE FORM OF AN EVOKED RESPONSE IN MAN

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 4, 1977 signed to press 30 Jul 76 pp 942-944

PETUKHOV, V. V., POPOV, L. A., and GODUKHIN, O. V., Institute of Biological Physics, Academy of Sciences USSR, Pushchino, Moskovskaya Oblast

[Abstract] There are many facts which indicate that the form of electric evoked brain responses is determined not merely by the parameters of the stimulus, but also by such features of the internal state of the organism as attention level, past experience, and so forth. Since controlled animal experiments have shown that an animal can vary its own brain responses in a purposeful direction through adaptive self-regulation of the internal state, it is logical to expect a similar mechanism in man. The present study was undertaken to demonstrate the existence of the human capability of controlling the amplitude component of a brain response through creation of a specific internal state by "will power." The subject was placed in a weakly illuminated sound-proofed chamber, and behind a semitransparent screen measuring 40 x 40 cm, beyond which, once every 3 seconds, was released a flash from an ordinary photostimulator. The responses of the subject were read off monopolarly from the medium line of the skull on the boundary of the parietal and occipital bones, using an ordinary disk-type EEG electrode, the indifferent electrode being placed on the earlobe. After appropriate amplification in the 10-60 Hz band and conversion into code, the brain responses were introduced into the "Dnepr-2" controlled computing complex. Further processing of the responses by computer consisted in searching for the negative maximum in the 100-130 msec interval from the moment of the flash, and, if this was found, in a further search for the positive maximum. If the amplitude between the two maxima exceeded the threshold assigned by the program (in the authors' case 20 μv), the computer worked out the second signal which the subject heard. All brain responses were consecutively averaged in two different groups, depending on the results of analysis of the chosen component. Such averaged response values, at the end of each test series (50 flashes), were entered in a photorecorder. The results of conscious efforts to vary brain-response components were different in the three subjects tested. It is concluded, however, that the capability of purposeful, conscious control over the amplitude of individual response components exists in principle in the human subject. This conclusion is supported by the fact that both the component and the operator in these tests were chosen absolutely at random. Figure 1; Table 1; References 11: 2 Russian, 9 Western.

USSR UDC 547.965:595.768

CONTENT OF FREE AMINO ACIDS IN HEMOLYMPH OF THE COLORADO BEETLE INFECTED BY THE WHITE MUSCARDINE FUNGUS AND POISONED WITH CHLOROPHOS

Moscow BIOLOGICHESKIYE NAUKI in Russian No 1, 1977 signed to press 25 Aug 75 pp 42-46

SIKURA, A. I., NAGORNAYA, I. M., and SIKURA, L. V., All-Union Scientific Research Institute for Biological Methods of Plant Protection

[Abstract] A study is made of changes in the content of free amino acids in the hemolymph of the Colorado beetle when infected by the entomopathogenic white muscardine fungus in pure form and in mixture with chlorophos in low concentrations. It is established that the changes in the quantitative content of amino acids are opposite in direction. Muscardinosis results in progressive decreases in the quantity of amino acids in the hemolymph. Mild poisoning with chlorophos first causes an increase in the content of amino acids, followed by a decrease until the normal level is once again approached. Tables 2; References 15: 11 Russian, 4 Western.

USSR UDC 595.77:577.352.4

PERMEABILITY OF THE INTEGUMENT OF CHLOROPHOS-RESISTANT AND CHLOROPHOS-SENSITIVE HOUSEFLIES FOR VARIOUS ORGANIC SUBSTANCES

Moscow BIOLOGICHESKIYE NAUKI in Russian No 1, 1977 signed to press 8 Oct 75 pp 55-59

PEREGUDA, T. A., Department of Entomology, Moscow State University

[Abstract] Isotope analysis is used to study the passage of three organic substances through the integument of chlorophos-resistant and chlorophos-sensitive houseflies. It is found that all of the substances pass through the integument of the resistance flies at lower rates than through the cuticle of the sensitive insects. The more polar compounds pass through the cuticle of both types of flies more rapidly than the less polar compounds. Removal of the surface layers of the epicuticle with chloroform leads to a significant increase in the permeability of the integument of the flies for organic substances, but even in this case the cuticle of the flies resistant to chlorophos is less permeable than the cuticle of the sensitive insects. The relationship between polarity of substances and rate of passage through the cuticle does not change after removal of the outer layers. Figure 1; Table 1; References 31: 5 Russian, 26 Western.

USSR UDC 616-056.3-036.2(571.54)

EPIDEMIOLOGICAL STUDY OF ALLERGY DISEASES IN THE BURYAT ASSR

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, 1977 pp 16-19

YANKHAYEV, V. B., PROSHCHALYKIN, A. I., MAVRINA, G. I., and YAROSHEVICH, D. G., Scientific Research Allergoly Laboratory, Academy of Medical Sciences USSR, Moscow

[Abstract] Morbidity of various allergic diseases in the USSR has been studied primarily from data of statistic records, and referral and hospitalization of patients into therapeutic-prophylactic institutions. A larger part of these examinations have been performed in the European part and in the southern districts of the USSR. Only isolated work has been reported for Siberia and the Far East. This article deals with Buratia and is based on a uniform questionnaire procedure. A total of 71,000 people were canvassed. The incidence of allergy diseases was 18.1 cases per 100 people of those questioned. The greatest incidence was for allergic dermatoses, drug allergy, and bronchial asthma. Others included exudative diathesis, allergic rhinitis, and pollinoses. Incidence data are tabulated by age, from children to adults. Rayons examined include the Kabansk, Selenginsk, Kyakhtinsk and Zaigraevsk rayons. Tables 2; No references.

USSR UDC 616.36-002-033-07

SUCCESSES IN THE STUDY OF HEPATITIS B AND HEPATIS B ANTIGEN (REVIEW OF FOREIGN LITERATURE)

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 77 signed to press 3 Jun 76 pp 45-48

KLYUCHAREVA, A. A., Infectious Diseases Clinical Hospital of the City of Minsk

[Abstract] This is a survey of exclusively non-Soviet contributions to knowledge of hepatitis B. The author identifies this disease as serum hepatitis. The discussion and continuity are drawn from foreign authors. Appearance of the hepatitis B antigen, viz. HBAg, among foreign populations is reported from published articles. The author notes the achievements made, and states that the preparation and introduction into wide practice of the specific immune preparations opens real prospects for lowering hepatitis B mortality. No insight is given to any Soviet advances. References 45.

USSR

UDC 616.056.3 613.2 616.36-002.14

FOOD ALLERGY IN EPIDEMIC HEPATITIS

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 149-152

STAROSEL'SKIY, D. V., and GRANITOV, V. M., Department of Infectious Diseases and Epidemiology (D. V. Starosel'skiy, doctor of medical sciences, head), Altay Medical Institute, Barnaul

[Text] [English abstract provided by the source] The antigenic properties of blood products processed by cooking were studied in 142 patients with epidemic hepatitis and 25 patients with jaundice of other etiology. An extract from meat and fish processed by cooking was used as an antigen. The complement fixation reaction and the reaction of passive hemagglutination revealed in 40.1% of patients with epidemic hepatitis antibodies to the extracts from meat and fish processed by cooking. The appearance in the blood of antibodies to these products in patients with epidemic hepatitis apparently is not related to the presence of duodenitis and perversion of the absorptive capacity of the intestinal mucous membrane, as similar antibodies were revealed in 11 of 25 patients with jaundice of other origin. The underlying cause here is disorders of the barrier function of the liver. Sensitization to meat and fish products of the character of an immediate allergy was observed in 22% of patients with epidemic hepatitis. References 10 Russian.

CZECHOSLOVAKIA UDC 616.988.25.576.858.25:576.895.421:616-036.22 (437.6 ZAVADA)

EPIDEMIC OF TICK-BORNE ENCEPHALITIS AT ZAVADA. RESULTS OF VIROLOGICAL INVESTIGATION

Bratislava BRATISLAVSKE LEKARSKE LISTY in Slovak Vol 66, No 5, Nov 76 signed to press 30 Sep 75 pp 589-594

GRESIKOVA, M., and SEKEYOVA, M., Institute of Virology, Slovak Academy of Sciences, Bratislava

[Abstract] Based on the finding of early antibodies, a mild epidemic of tick-borne encephalitis was diagnosed at the locality of Zavada in 1974. For the first time sheep were found to be the source of infection. Out of 548 examined sheep, 82 (15 percent) gave a positive serum reaction for the tick-borne encephalitis virus. The virus was contained in the milk of the sheep, and was persistent in food products made with this milk. Even among the healthy inhabitants of Zavada, antibodies of tick-borne encephalitis were found in 17.6 percent of the healthy population. All of these people were consuming foods made out of the infected milk. This also was the first time that it was possible to prove under natural conditions that tick-borne encephalitis can be transmitted by the milk of sheep, and that this virus persists in the milk and in dairy products made from it. Figure 1; Table 1; References 10: 9 Czech, 1 Western.

CZECHOSLOVAKIA UDC 616.988.25-036.22.576.895.121(437.6 ZAVADA)

EPIDEMICS OF TICK-BORNE ENCEPHALITIS IN ZAVADA. RESULTS OF EPIDEMIOLOGIC EXAMINATIONS

Bratislava BRATISLAVSKE LEKARSKE LISTY in Slovak Vol 66, No 5, Nov 76 signed to press 2 Oct 75 pp 595-598

STUPALOVA, S., and GUNAR, J., Okres Station of Hygiene, Nitra; Okres Station of Hygiene, Topolcany

[Abstract] The local epidemics of tick-borne encephalitis in the village of Zavada, in the district of Topolcany, which occurred in 1974 resulted in 13 inhabitants contracting the disease. Epidemiologic investigation showed that sheep milk and products made from it were the effective factors in the transmission of the infection. Sheep were kept in the community only since 1973, and were first taken to pasture in March 1974; first three cases of the disease were observed on the 3d of April. Samples taken from the cheese produced from the sheep milk 2 months after the height of the

epidemic showed no presence of the virus of encephalitis. 240 ticks were collected in the locality; 239 were Ixodes ricinus, one Dermacentor marginatus. Some cases of the disease have been observed in nearby villages during the past 14 years. Figures 2; Table 1; References 4 (all Czech).

CZECHOSLOVAKIA UDC 616.988.25-036.22:576.895.421(437.6 ZAVADA):616

CLINICAL OBSERVATIONS OF TICK-BORNE ENCEPHALITIS AT ZAVADA

Bratislava BRATISLAVSKE LEKARSKE LISTY in Slovak Vol 66, No 5, Nov 76 pp 599-604 (Manuscript received 30 Oct 75)

NECAS, S., Department of Infectious Diseases, Okres Institute of Public Health, Topolcany

[Abstract] Clinical findings concerning ten patients suffering from tick-borne encephalitis during the epidemics at Zavada are discussed. Eight of the patients showed a viremic form of the disease with manifest symptomatology of the viremic stage; in the other two patients the abortive meningitic type was observed. A monophasic course of the disease was recorded in all 10 cases. Clinical and serological examinations excluded the possibility that the patients suffered from other infectious diseases which were originally indicated by differential diagnosis. The levels of specific antibodies determined by hemagglutinative-inhibitory tests with antigens of tick-borne encephalitis and the dynamic follow-up confirmed that the disease was tick-borne encephalitis. A complex evaluation of all the findings made on the patients indicated that the infection was due to an alimentary transfer of the disease from sheep's milk and products made from it. Two of the patients did not have direct contact with the sheep, but did eat foods prepared from sheep's milk. Tables 5; References 12: 10 Czech, 1 USSR, 1 Western.

EAST GERMANY

IMPROVING DIAGNOSTIC AND EPIDEMIOLOGICAL OPERATIONS IN THE FIELD OF ENTEROVIRUSES

East Berlin DAS DEUTSCHE GESUNDHEITSWESEN in German Vol 32, No 5, 1977
signed to press 11 Oct 76 pp 232-235

ADAMCZYK, B., Dr, Department of Virology, Bezirk Institute of Hygiene, Berlin-Buch; MUELLER, G., DR., ADAMCZYK, G., and CLEMENS, W., Institute of Medical and General Microbiology, Virology, and Epidemiology, Humboldt University, East Berlin

[Abstract] Studies based on the authors' experience and on the examination of samples from 574 patients with suspected viral diseases indicate that (1) to ensure proper diagnosis and epidemiological control in the field of enteroviruses, isolation tests and typing must be continuously carried out in the Bezirk virus laboratories. The importance of isolated virus strains as disease-causing agents can be properly assessed only if the immunoresponse is tested at the same time; (2) to create optimum conditions for appropriate studies for the existing epidemiological situation in the Bezirk virus laboratories, all isolated and typed strains, including the homologous immunoresponse, must be reported forthwith in the weekly epidemiological reports; (3) neutralization tests with reference strains should be carried out in a systematic manner against the prevailing virus types, taking into consideration their medical and epidemiological importance since these tests provide relatively fast diagnoses; and (4) systematic neutralization tests provide precise and specific diagnostic information if the serum samples were secured at the proper periods (between the 1st and 8th and between the 12th and 18th day of the onset of the disease). Attention to these points will make the Bezirk laboratories most efficient in these operations. Figures 2; Tables 2; References 3.

USSR UDC 616.988.23-053.2-07:614.7

RAISING IMMUNITY TO POLIOMYELITIS AMONG CHILDREN IN THE FIRST TWO YEARS OF LIFE

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 77 signed to press 23 Mar 76 pp 53-55

VOTYAKOV, V. I., and FELD'MAN, E. V., Belorussian Scientific Research Institute of Epidemiology and Microbiology

[Abstract] The authors state that a decisive role in protection of the population against poliovirus infection is played by collective immunity. Data of Smorodintsev, et al. (1960), Chumakov, et al. (1963), Votyakov, et al. (1966), and Boettiger (1969) indicate that epidemic manifestation of poliomyelitis is practically stopped if 96% and more of the children and adolescents have antibodies to all three types of the poliovirus in a titre of 1:4 and above. In the early 60s the immunity of the population of BSSR, thanks to the conduct of regular vaccinations, approached this level. The level was less favorable in the age group up to two years. Subsequent increase in the immunity did not follow increase in the number of single vaccination campaigns. It appears necessary to introduce polio vaccination program on the basis of individual need. Additional vaccination is indicated for children reaching two years. No references.

USSR UDC 616.36-036.12-06:616.15-07(048)

IMMUNOGLOBULINS OF BLOOD SERUM DURING CERTAIN CHRONIC DISEASES OF THE LIVER

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 77 signed to press 21 Jul 76 p 82

YEPISHIN, A. V., Ternopol'

[Abstract] The author measured IgA, IgM, and Igσ in blood sera of 105 patients, 16 to 76 years, 72 males, 33 females. Assay was done by the Manchini method with monospecific sera of the Institute of Epidemiology and Microbiology imeni Gamaleya. Patients with cirrhosis of the liver revealed a statistically reliable rise in all three classes of serum immunoglobulins; in persistent hepatitis, the rise was only in the cass σ. The mean indices of IgA and Igσ in patients with liver cancer were normal; for IgM it was decreased. The data indicate disruption of bodily immunological reactivity in patients with chronic liver disease, and a relation between the level of serum immunoglobulins and the clinical-morphological form of the disease. Some therapeutic measures are suggested. No references.

USSR UDC 615.473.92

ANALYSIS OF WORK OF CLAMPING PADS IN JET INJECTORS

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 10 May 76 pp 23-27

GIGAURI, V. S., KOROTEYEV, A. V., and MARCHUK, L. M., All-Union Scientific Research Institute of Clinical and Experimental Surgery, Ministry of Health USSR, Moscow

[Abstract] Jet injectors (designated BI-1, BI-2, etc., in the USSR) are widely used, particularly in epidemiology and mass prophylactic vaccinations. Soviet authors who have commented on the advantages of jet injectors are mentioned (V. D. Belyakov, et al., Voenno-med zhur, No 1, 1973; A. A. Vorob'yev, et al., 1972; and Gigauri, Voenno-med zhur., No 1, 1973). Gigauri and others have experienced some problems, e.g., skin cuts, bleeding, hematomas, pain, intracutaneous entrapment of the preparation with subcutaneous or intramuscular administration, intramuscular infiltration of the preparation with subcutaneous administration, etc. His laboratory has found that the type and quality of the injector is greatly affected by the clamping pads of the injectors. They have tested 9 forms of the pads (illustrated in the text) and have identified forms suitable for mass immunization. Pads in the form of a circle with eccentrically-placed nozzle, in the form of a plate, and in the form of a cylinder truncated on two sides, provide reliable fixation of the injector on the skin surface and good subcutaneous injections. The frequency and degree of bleeding and pain are not a function of the form of the pad but due to individual features of the locality of the injection. Figure 1; Tables 2; References 11: 9 Russian, 2 Western.

CZECHOSLOVAKIA UDC 613.633:616.24-003.65-057:622

OCCURRENCE AND COURSE OF SILICOSIS AS AN INDICATOR OF HAZARDS IN ORE MINING. PART II.

Prague PRACOVNI LEKARSTVI in Czech Vol 28, No 10, Dec 76 pp 377-380
(Manuscript received 30 Mar 76)

SPACILOVA, MARIA; and DAVID, ALOIS; Clinic of Occupational Diseases, Faculty of General Medicine, Charles University, Prague; Institute of Hygiene and Epidemiology, Prague; Center of Labor Hygiene and Occupational Diseases, Prague

[Abstract] The incidence and courses of silicosis were investigated in one of the mining centers of central Bohemia. The amount of suspended solid particles in the working atmosphere and the methods used for its limitations were recorded. Pneumoconiosis was found in 269 miners, which was a third of all the workers. The average period of exposure for the occurrence of silicosis was 21.78 $\pm$ 8.46 years. During a follow up period of 10 years, 42 percent of the patients showed deterioration of their condition to the stage of complicated lung silicosis. 56 percent of the original patients died during an average period of 9.96 $\pm$ 5.06 years after the first pneumoconiotic changes were observed. The average age at the time of the death was 62.38 $\pm$ 4.16 years. In 1956 a system of ventilation with dust removal during the drilling operations was installed. No new cases of silicosis were observed after this improvement in working atmosphere. In an earlier report published by the authors, covering another mine, the time needed for the development of silicosis was only 7.9 $\pm$ 1.15 years. The incidence of silicosis was also a factor of the amount of dust in that mine; elimination of the dust in that location had a similar effect as that described in the present paper. Figures 3; Tables 2; References 2 (both Czech).

USSR UDC 632.95.024.391

PROTECTION OF THE RESPIRATORY ORGANS DURING WORK WITH PESTICIDES

Moscow ZASHCHITA RASTENII in Russian No 1, Jan 77 p 36

VOYTENKO, G. A., candidate of medical sciences

[Abstract] Entry of pesticides through the respiratory organs is a very serious danger. Chemical protective agents can enter the breathing area of the workers in the process of transportation, execution of the preparatory work, and processing and tending of plants. So that this does not occur, it is necessary to make use of agents for individual protection of the respiratory organs. Account is taken, in choice of these agents, of the volatility of the separate compounds, their aggregate state, and chemical structure. The most dangerous are the compounds which are highly volatile (organomercurials, some organochloro- and organophosphorous compounds, and others), and, also, the smokes which form during burning of smoke-pots, the fogs with particle size less than 1 mcm. Of great significance is the absorption--from the mucosa of the respiratory tract--of pesticides in the drop-liquid phase. To protect the respiratory organs from dust of mineral fertilizers and pesticides which have low volatility (calcium arsenate, ethersulfonate, zuparen, etc.), it is necessary to use respirators: SHB-1, Lepestok-40, and F-62M. In work with organochloro- and organophosphorous compounds use is made of respirators with an "A" protective gas cartridge; in work with organomercurials, the respirators have a "G" cartridge or a protective gas mask with a "G" box (Abstractor: this is the cyrillic G, in both cases). Fumigation warrants special attention. Here it is necessary to employ industrial protective masks. With use of chloropicrin, dichoroethane, or methyl bromide, the people work in protective masks fitted with "A" boxes; with strong acid, "B" boxes. (Abstractor: Cyrillic A; B here is the Cyrillic B, third letter of that alphabet). Proper cleaning and maintenance of materials used is essential; medical contraindications for use of some materials, e.g., presence of certain cardiovascular diseases, must be observed. No references.

USSR UDC 613.6:616.5(574)

WORKING CONDITIONS AND DERMATOSIS MORBIDITY AMONG COAL INDUSTRY WORKERS IN KAZAKHSTAN

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 26-28

ALTYNBEKOV, B. YE., and ROYTSHTEYN, B. I., Kazakh Scientific Research Institute for Labor Hygiene and Occupational Diseases

[Abstract] A study was made of the working conditions, nature, frequency and extent of dermatoses among underground miners and those who worked on

the surface. In order to produce more complete information, data were gathered on morbidity involving lost time, visits to treatment institutions and results of medical examinations. The study indicated the specific effect of coal dust and mine water, related to their chemical composition. Allergic dermatoses resulting from these allergens produce a significant economic loss each year. Prevention of allergic dermatoses among coal miners should include sanitary treatment of working clothing (dust removal, regular washing), restoration of the acid-alkaline barrier of the skin (use of greasy and acidifying creams), prevention of mycoses of the feet, as well as timely and proper transfer of workers suffering from dermatitis and eczema to other jobs. Table 1.

USSR UDC 616.5+616.521 (057-084)

THE MORBIDITY OF OCCUPATIONAL DERMATITIS AND ECZEMA AMONG TEXTILE WORKERS IN FINISHING PLANTS AND THE PROBLEM OF PROPHYLAXIS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 28-31

BENEDIKTOVA, K. P., ANTON'YEV, A. A., and TUMARKIN, B. M., Ivanovo Medical Institute; Central Order of Lenin Institute for the Advanced Training of Physicians

[Abstract] For 8 years, the authors studied technological processes, occupational hazards, working conditions and morbidity of workers involved in finishing of fabrics at large textile enterprises in Ivanovo. The causes of development of dermatitis and eczema were studied, and repeated preventive medical examinations were performed. The morbidity was also studied and prophylactic measures introduced. It was established that dermatitis and eczema arise most frequently in persons working in certain shops, especially in bleaching, dyeing, printing and finishing shops. The authors recommend more frequent medical examination of workers in these shops, obligatory hand protection and frequent washing with effective cleaning substances less harmful to the skin than the bleached lime and calcined soda currently used.

USSR

HYGIENIC CHARACTERISTICS OF NOISE IN MODERN ELECTRIC STEEL MAKING SHOPS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 35-36

SOLOV'YEV, V. A., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR

[Abstract] A study was made of the noise level in a modern, high-capacity electric steel-making shop. It was found that noise is one of the leading specific production hazards of this type of shop, its intensity being significantly higher than the permissible level throughout the working day, except for the few minutes when the furnace is stopped between cycles of steel making, at which time the noise level drops barely below the permissible "maximum" norms. Several measures such as limiting the maximum height from which metal scrap can be dropped, automation of control of processes, replacement of magnetic scrap hoists with basket hoists, etc. are recommended. When possible, personnel should operate equipment in these shops from inside sealed and soundproofed cabins. References 3 (Russian).

USSR UDC 613.164 (656.71)

SOCIAL-PHYCHOLOGICAL AFTEREFFECTS OF EXPOSURE TO NOISE

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 37-39

TOKAREV, V. A., Karaganda Medical Institute

[Abstract] It is noted that noise pollution is a problem equal in seriousness to other types of air pollution in large cities throughout the world. The cumulative effects of noise pollution result in long-term, gradual loss of hearing. This article, based largely on American reports, outlines the extent and seriousness of the problem of noise pollution and a few of the general results as concerns damage to the hearing and central nervous system. References 7 (Russian).

USSR

PORPHYRIN METABOLISM DURING EXPERIMENTAL PHOSPHORUS INTOXICATION

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 39-42

IKIMANOVA, G. K., Kazakh Scientific Research Institute for Regional Pathology

[Abstract] A study of the porphyrin metabolism of persons who must work in contact with phosphorus compounds has revealed a number of interesting clinical facts. The author performed experiments on 110 white rats, exposed to various concentrations of zinc phosphide and zinc oxide to confirm the clinically observed facts. The experiments demonstrated that phosphorus compounds produce significant changes in porphyrin metabolism. As the dose of the toxic substance and the time of exposure increase, the concentration of porphyrins in the blood and urine also increase. Porphyrin metabolic disorders were manifested in the early stages of exposure to the phosphorus compounds studied.

USSR

UDC 616.001:612.015.301

OXYGEN MODE OF THE MUSCLES OF MINERS SUFFERING FROM VIBRATION SICKNESS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 43-45

FILIN, A. P., DUDINSKIY, A. M., and MISHNEV, B. T., Laboratory of Noise and Vibration, Kazakh Scientific Research Institute for Labor Hygiene and Occupational Diseases

[Abstract] A study was made of the oxygen tension (pO_2) in the muscles of the inner surface of the upper third of the right forearm of 71 mining workers suffering from vibration sickness (underground mine drill operators) by a polarographic method. These workers were found to manifest a significant change in the oxygen tension in the muscles, resulting from disorders of the oxygen delivery process. Polarography, in combination with the hypoxic test, is a valuable diagnostic tool and can be used to test the effectiveness of therapeutic measures in vibration sickness. The therapeutic measures used in vibration sickness must include approaches designed to normalize the oxygen mode of the tissues. References 2 (Russian).

USSR UDC 612.452.018:616.839-008.6:616-001.34

SOME INDICATORS OF THE FUNCTIONAL STATUS OF THE SYMPATHETIC-ADRENALIN SYSTEM IN VIBRATION SICKNESS OF MINERS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 45-46

TOLOKONNIKOVA, E. A., Clinical Department of the Kazakh Scientific Research Institute for Labor Hygiene and Occupational Diseases

[Abstract] 210 workers with varying degrees of vibration disease, who had been working with vibrating tools from 3 to 20 years, were examined to determine the status of their neurohumoral-hormonal apparatus. By studying the functional status of the sympathetic-adrenal system, the author discovered a tendency toward increased adrenalin-like substances in the blood in patients with the initial stage of the disease, apparently resulting from overstimulation of peripheral autonomic formations. The overall study of the functional status of the sympathetic-adrenal system, as well as clinical and clinical-physiological data, demonstrated a significant reduction in adaptation and potential capacity of the system during vibration disease, which may be related to disorders in the neurohumoral self-regulation system. These changes may be one of the pathogenic principles of the disruption of autonomic functions in vibration pathology, reflecting changes in the higher regulatory and compensatory mechanisms at the level of the hypothalamus and reticular formation.

USSR UDC 616.31:616-018.82;613.632.4

SOME PECULIARITIES OF THE CLINICAL MANIFESTATIONS OF GRANOSAN POISONING

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 47-49

CHATSKIY, G. YA., Kazakh Scientific Research Institute for Regional Pathology, Department of Endocrinology of the Republic Clinical Hospital

[Abstract] A report is presented on cases of granosan intoxication in two families, with severe acute poisoning and mild chronic poisoning. The first symptoms appeared 2 or 3 weeks after using products made of contaminated grain, and amounted to general weakness, rapid and progressive weight loss, an unpleasant metallic taste in the mouth, pains in the gums, loss of appetite, thirst, stomach ache, dull headaches, poor sleep and nightmares. Emotional disturbances appeared. Along with the asthenoneurotic symptoms, all patients manifested a typical picture of toxic encephalitis, and (in 3 patients) encephalomyelopolyneuritis. The disease continued to progress for 2 or 3 weeks after all granosan was eliminated from the diet. Severe

mental disturbances developed. A unique disorder of the somatic and neurologic status developed, plus weight loss, dry skin, paleness, plastic appearance of the skin of the extremities and thorax, hyperkeratosis of the skin of the palms. Slight expansion of the heart was observed, plus dullness of heart tones, tachycardia up to 100-120 beats per minute and systolic noise at the apex cordis. The EKG showed the greatest changes in the ST interval and T wave. The overall indication was one of hypophysis-hypothalamus pathology, moderate cerebellar disorders in combination with paresis of cerebral nerves 3, 7 and 12 in the early stages.

USSR UDC 616.24-008.4-036.11-02:615.285.7.099

ACUTE RESPIRATORY DEFICIENCY DUE TO POISONING BY ORGANOPHOSPHORUS INSECTICIDES (PATHOGENESIS, CLINICAL FEATURES AND DISCRIMINATIVE THERAPY)

Moscow TERAPEVTICHESKIY ARKHIV in Russian Vol 49, No 1, Jan 77 pp 75-80
manuscript received 12 Jul 76

GEMBITSKIY, E. V., Military Clinic for Field Therapy and GAYDUK, V. A., S. M. Kirov Military Academy of Medicine, Leningrad

[Abstract] The results of a composite clinical-functional study are reported concerning the dynamics of external respiration in 120 patients (84 men and 36 women) poisoned by oral intake of the organophosphorus insecticide CHLOROPHOS. The findings were: 33 patients slightly intoxicated, 50 patients moderately intoxicated, and 37 patients severely ill. The patients ranged from 18 to 65 years old, 83 of them under 40 years old. The control group consisted of 20 rather healthy persons (13 men and 7 women) in the 18-43 age range. Conventional clinical analysis was supplemented with spirography, pneumotachometry, cuvette oxyhemography, acid-base balance measurements in the arterial blood, and electromyography of respiratory muscles. The data were processed statistically in terms of basic symptoms and bronchial passage indicators, whereupon central and peripheral respiratory paralysis could be differentially diagnosed. After a moderate intoxication level had been reached, an obstructive acute respiratory deficiency was found to develop, eventually leading to neuromuscular and parenchymatous modes of acute respiratory deficiency. Therapy should be discriminative, with a proper consideration of various pathogenetic mechanisms. Figures 2; Tables 3; References 35: 30 Russian, 5 Western.

USSR UDC 616.12-073.97 613.62 62

ECG CHANGES IN WORKERS OF THE MAIN OCCUPATIONS OF THERMOELECTRIC POWER STATIONS

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 139-143

KARPENKO, P. A., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] The functional state of the cardiovascular system was studied in 652 workers of the main occupations of thermoelectric power stations. In the course of their jobs, those workers are subjected to the effect of noise, high temperature and other harmful effects against a background of neuroemotional and physical tension. Frequent disorders of automatism, conduction and contractile capacity of the myocardium has been found among these workers. In most cases those changes were considered manifestations of extracardiac disorders, and in some cases a result of diffuse changes of the myocardium developing under the effect of the above-mentioned occupational factors. The results indicate a need for strict selection of workers for the occupations in question.

USSR UDC 613.6:616.24-008.4-07

STUDY OF THE EXTERNAL RESPIRATION AND CONDITIONING FUNCTION OF THE RESPIRATORY APPARATUS DURING OCCUPATIONAL SCREENING OF WORKERS OF SUPERPHOSPHATE PRODUCTION

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 130-133

KUCHUK, A. A., Department of Hospital Therapy 2 (Professor B. A. Zelinskiy, head), Vinnitsa Medical Institute

[Abstract] Study of 149 superphosphate production workers revealed signs of pathology of the respiratory organs in 118 of them. Disorders of external respiratory function were found in 89 patients. It was found that in conducting occupational examinations of persons engaged in production with possible harmful effects on the organs of respiration it is necessary, besides ordinary clinical examination, to conduct an obligatory investigation of the ventilation and conditioning function of the lungs in order, on the one hand, to avoid an erroneous subjective evaluation and, on the other, not to overlook persons requiring improvement of their health and to prevent further development of a pathological process in the respiratory system. The most convenient and simplest tests for that purpose are forced vital capacity of the lungs, maximal volume rate of intake and output, respiration reserve, maximal ventilation of the lungs, difference between

body temperature and that of the respired alveolar air, as those tests give reliable information even in the early stages of respiratory insufficiency. References 7 (Russian).

USSR UDC 616.72-002 616.711-507

DEFORMING ARTHROSIS AND DEFORMING SPONDYLOSIS IN DIESEL LOCOMOTIVE BUILDERS, THEIR PROPHYLAXIS AND TREATMENT

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 126-130

SINILO, M. I., MIKHAYLENKO, I. M., KONDRATENKO, N. N., and DARAGAN, T. V., Department of Traumatology, Orthopedics and Military Field Surgery (Professor M. I. Sinilo, head), Voroshilovgrad Medical Institute

[Abstract] In 1972-1974 863 workers in a diesel locomotive plant who had complained of pain and discomfort in the joints and spine were subjected to clinical and X-ray examination and deforming arthrosis (127) and deforming spondylosis (35) were found in 162 workers (109 men and 53 women). Unfavorable sanitary and hygienic working conditions were noted, especially in the hot shops, in which the workers were subjected to the complex effect of toxic gases, dustiness, noise, high temperature, overcooling and drafts. A large portion of the time the workers were in a constrained position and had to take on considerable loads while performing laborious operations. In 32.8% multiple microtraumas of the joints were noted, 21.5% were constantly in an uncomfortable position during work, 23.6% experienced extreme loads, 9.1% experienced single traumas, 3.6% infectious polyarthritis and 9.4% had undetermined causes. Study of their characteristics included biochemical parameters of the blood (total protein, alkaline phosphatase activity, concentration of total glycoproteins and titer of O-antistreptolysin antibodies). Results of treatment and prophylaxis of diseases of the joints and spine related to excessive functional loads are discussed.

USSR UDC 615.835.33 546.262.3.31-099

USE OF HYPERBARIC OXYGENATION IN COMPLEX THERAPY OF CARBON MONOXIDE INTOXICATION

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 133-139

YEMIN, V. M., Nikolayev

[Abstract] Twnety-two patients with carbon monoxide intoxication were studied. In most cases the main treatment was hyperbaric oxygenation (oxygen at 2 atmospheres) in a Vickers pressure chamber, which made it possible to control the comatose state rapidly in most cases. Hyperbaric oxygenation was used in combination with treatment of brain edema with mannitol and Lasix, normalization of tissue respiration, the administration of large doses of nicotinamide and vitamins, normalization of pulmonary ventilation, and prophylaxis and treatment of pulmonary complications. Early use of hyperbaric oxygenation, which is a pathogenically-based therapy, is quite efficient in treatment of carbon monoxide poisoning.

USSR UDC 615.33:576.851.48

SENSITIVITY OF ESCHERICHIA COLI TO SOME ANTIBACTERIAL AGENTS

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 77 signed to press 17 Feb 76 pp 51-53

VAL'VACHEV, N. I., and ZHIZHEL', A. O., Department of Epidemiology and Microbiology of the Belorussian Institute for the Advanced Training of Physicians; First Clinical Hospital of the City of Minsk

[Abstract] The authors tested the sensitivity of 1478 strains of Escherichia coli, isolated from patients in 1970-1974 to several antibiotics using the standard paper disc method. 96 other cultures, obtained in 1975, were also tested by serial dilution. Sensitivity was based on Ministry of Health regulation No 250, 13 March 75, standards. The antibiotics were empirically grouped according to result. For group 1, streptomycine and monomycine, the sensitivity of the organisms remained about the same in 1970-74; for group 2, penicillin and erythromycin, sensitivity decreased; for group 3, tetracycline and levomycetine, sensitivity increased in those years. Of the 96 strains in 1975, the greatest sensitivity was shown to gentomycine and solafur. A substantial difference in the proportion of antibiotic-sensitive strains from different origins: it was highest in those strains isolated from the peritoneal contents, and least in strains obtained from the urine. Tables 2; No references.

USSR UDC 615.477.8.014.45

COLD STERILIZATION OF MEDICAL ARTICLES MADE OF PLASTICS

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 19 Apr 76 pp 20-23

NIKITINA, L. A., MASSLENIKOV, YU. I., ZAIKINA, I. M., RAYKHLIN, L. B., MILUSHKINA, L. K., and KRIVONOSOV, A. I., All-Union Scientific Research Institute of Medical Polymers, Moscow

[Abstract] Plastic medical articles are not amenable to sterilization by boiling, autoclaving, or hot air. Chemical methods have been developed, for example, application of reagents such as performic and peracetic acids, diocide, furacillin, antibiotics and alcohols. Some sterilizing reagents, e.g., the peracids are aggressive and damage the plastic articles. The authors have found that "Dezoxon-1" can be used for sterilization of polymeric materials without any serious alteration of the physical-mechanical properties of the plastic articles. An exposure of 15 min completely sterilized objects made of Dacryl-4 (cast acrylate), SEVA (copolymer of

ethylene and vinylacetate), PEVD (high pressure polyethylene), CN-20M (a copolymer of styrol) and other plastic items. Tables 2; References 5: 4 Russian, 1 Western.

USSR

UDC 575

SYNTHESIS OF VIRUS-INDUCED INTERFERON WHEN CELLS ARE EXPOSED TO IRRADIATION AND CHEMICAL MUTAGENS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 16 Apr 76 pp 680-682

DUBININ, N. P., academician, ZASUKHINA, G. D., L'VOVA, G. N., KIRKOVA, Z. S., and YERSHOV, F. I., Institute of General Genetics, Academy of Sciences USSR, Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] Study is made of the synthesis of virus-induced interferon under the influence of gamma rays and ultraviolet radiation, and the chemical mutagens $CdCl_2$, $ZnCl_2$ and ethyleneimine. Interferon production was induced in chick embryo cells by using flu virus as the challenge virus. The cells were exposed before infection to ultraviolet light in doses of 50-1500 erg/mm^2, gamma radiation in doses of 50-5000 rads, and treated with $CdCl_2$ in a concentration of $3 \cdot 10^{-6}$ M and $ZnCl_2$ in a concentration of $8 \cdot 10^{-5}$ M. The salts were added throughout culturation. Ethyleneimine was treated similarly in concentrations of 1:50,000, 1:70,000. It was found that the flu virus did not reproduce in this cellular medium, although it is an active inducer of interferon. None of the investigated factors had any influence on the activity of the residual cultural virus. The titer of interferon in control experiments was 1250 units per mg; gamma radiation of 100 rads increases synthesis of interferon to 5500 units/mg, and at 400 rads--to 22,000 units/mg, while increasing the dosage of irradiation to 5000 rads results in a drop to 2500 units/mg. Ultraviolet light and chemical mutagens inhibited the synthesis of virus-induced interferon. It is suggested that the stimulating effect of gamma rays is due to triggering of "derepression" of a gene (or genes) that code for synthesis of interferon. Figure 1; References 2 (Western).

USSR UDC 577.15+547.963

INVERSE TRANSCRIPTION OF AN RNA FRAGMENT HAVING A SECONDARY STRUCTURE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 30 Sep 76 pp 710-713

FROLOVA, L. YU., BERZIN', V. M., YANSONE, I. V., GREN, E. YA., METELEV, V. G., SMIRNOV, V. D., SHABAROVA, Z. A., and KISELEV, L. L., Institute of Molecular Biology, Academy of Sciences USSR, Moscow; Institute of Organic Synthesis, Academy of Sciences Latvian SSR, Riga; Moscow State University imeni M. V. Lomonosov

[Abstract] Research is done to determine whether complete inverse transcription of an RNA fragment with stable secondary structure occurs in a system with predetermined primary structure of the polyribonucleotide matrix and seed. The synthesis was catalyzed by revertase, an octadeoxyribonucleotide seed was used, and the fragment was RNA MS2. The results show that synthesis of polydeoxyribonucleotide depends completely on addition of the seed. In the absence of the matrix, synthesis does not occur. The reaction is inhibited by actinomycin D. The product of synthesis does not contain high-molecular polynucleotides, which is an indication of absence of "slippage" of the matrix observed on synthetic homopolymers. It is suggested that revertase has the capacity to untwist sections of polynucleotides that have a secondary structure. This capacity is sufficient for complementary copying of oncornaviral and possibly other RNA's in vivo, but is not adequate for using the strongly structurized RNA's as inverse transcription matrices. Figures 3; References 15: 4 Russian, 11 Western.

USSR UDC 575.1.113+576.-858.9

BUILDING RECOMBINANT MOLECULES OF DNA IN VITRO, AND CLONING BY USING THE EcoRI* ACTIVITY OF EcoRI RESTRICTION ENDONUCLEASE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 8 Oct 76 pp 687-690

MEL'NIKOV, A. A., KUZ'MIN, N. P., KOPYLOVA-SVIRIDOVA, T. N., and BAYEV, A. A., academician, Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR, Pushchino, Moscow Oblast

[Abstract] The authors investigate the feasibility of using the EcoRI*-activity of restriction endonuclease to produce recombinant molecules of DNA (recombinants) in vitro, and also the cloning of DNA fragments.

Infection activity of the recombinants was determined in a $CaCl_2$-dependent transfection system using E. coli 802 $r_k m_k^+$. The recombinant DNA's were obtained from phages isolated from individual negative colonies and allowed to multiply. Designation is by the ordinal number of the colony of the phage from which the recombinant DNA was derived, followed by the time in minutes in parentheses corresponding to the duration of incubation of the DNA fragment of phage T5sto with molecular weight of 13.5 magadaltons with restrictase under EcoRI* conditions. Hybridization of the resultant recombinants with ^3H-DNA of phage T5+ showed that only recombinants 7(15) and 5(45) have DNA fragments of phage T5. The results of the study indicate that it should be possible to use the EcoRI*-activity of restriction endonuclease to build recombinant DNA's in vitro. Preliminary data on hybridization of recombinant 7(15) with T5-phage-specific 4S RNA enriched with tRNA shows genes of tRNA in the fixed fragment. Figures 4; Table 1; References 11: 2 Russian, 9 Western.

USSR UDC 575.24+576.815.5

ULTRAVIOLET INDUCTION OF ANTIMUTAGENIC ACTIVITY IN BACILLUS SUBTILIS CELLS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 18 Oct 76 pp 683-686

DUBININ, N. P., academician, FILIPPOV, V. D., and ZAGORUYKO, YE. YE., Institute of General Genetics, Academy of Sciences USSR, Moscow

[Abstract] It has been suggested that mutations in Escherichia coli are produced by an enzyme synthesized de novo in cells exposed to ultraviolet light and taking part in post-replicative reparation of DNA. The constitutive enzyme system of excision reparation supposedly removes the photoproducts from the cellular DNA without the formation of mutations, i.e., it is an antimutagenic factor; when synthesis of this enzyme (mutagenic function) is suppressed, e.g., by nitrogen starvation of the irradiated bacteria, excision reparation eliminates most of the premutation damage, causing an irreversible mutation frequency decline. The authors investigate the extent to which the hypothesis is applicable to induced mutagenesis in Bacillus subtilis. The effect that pre-exposure of the bacteria to a low dose of UV had on the process of mutation frequency decline was studied in a nitrogen-free medium. It was found that pre-exposure considerably accelerates the process of MFD after repeated UV exposure. The authors failed to confirm the hypothesis of an induced mutagenic function in B. subtilis; however, the research results suggest that the low frequency of UV-induced mutations under conditions of inhibition of post-radiation synthesis of macromolecules is not the

result of absence of the hypothesized enzyme, but rather is due to anti-mutagenic activity showing up as unerring excision reparation of the quiescent chromosome; it is possible that this same enzyme system would show up as a mutagenic function under conditions of post-radiation growth where it repairs loci occupied by a transcription. Figures 2; References 10: 3 Russian, 7 Western.

USSR UDC 547.963.32:576.311

PLASMID DNA'S OF PSEUDOMONAS PUTIDA PpG7

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 2, 1976 signed to press 20 Sep 76 pp 482-484

ZAKHARYAN, R. A., AGABALYAN, A. S., AKOPYAN, S. M., KOCHARYAN, SH. M., and BORONIN, A. M., Institute of Experimental Biology, Academy of Sciences Armenian SSR, Yerevan, and Institute of Physiology and Biochemistry of Microorganisms, Academy of Sciences USSR, Pushchino, Moscow Oblast

[Abstract] Plasmid DNA's of Pseudomonas putida were electrophoretically and electron microscopically characterized. Clarified lysate was obtained by centrifugation, and the DNA-containing liquid was deproteinized with a mixture of chloroform and amyl alcohol. Alkaline or RNase or pronase treated material was then fractionated on a Sepharose 4B column, and the DNA fraction separated electrophoretically on 0.6% agarose gel by the ethyl alcohol-bromide standard method. Preparation of material for EM was according to the general method of Kleinschmidt. Three basic types of plasmid DNA found had molecular weights of 3-5 x 10^6 daltons, 15-18 x 10^6 daltons or 29-33 x 10^6 daltons. Open and closed circular forms were found. They appear to be associated with the distinctive metabolic properties of the organism. Figures 2; References 11 (Western).

BULGARIA

EFFECTS OF CERTAIN DRUGS CONNECTED WITH THE SYSTEM OF 3'-5'-cAMP ON THE PICROTOXIN CONVULSIVE-SEIZURE THRESHOLD AND ON THE ACTION OF GABA

Sofia COMPTES RENDU DE L'ACADEMIE BULGARE DES SCIENCES in English Vol 29, No 11, 1976 pp 1699-1702

GEORGIEV, V. P., and PETKOVA-RADKOVA, B. P., Bulgarian Academy of Sciences

[Abstract] The cAMP system affects many vital processes of the body, including the CNS. Pharmacological agents increase or inhibit activities of units of the system. Isopropylnoradrenaline activates the adenylatecyclase and stimulates the formation of cAMP. Adenosine and its derivatives are mediators in the purinergic inhibitory neurons in the CNS and PNS activating the adenylatecyclase in the brain. It passes easily through the hematoencephalic barrier. Cyclic nucleotides participate in the convulsive-seizure processes. The authors studied the effects of isopropylnoradrenaline, adenosine, and of cAMP and its dibutyryl derivative (d,b-cAMP) on the picrotoxin convulsive-seizure threshold of mice and on the action of GABA. The convulsive-seizure threshold is increased by all of the investigated drugs, with the exception of cAMP which lowers it. Picrotoxin raises the cGMP level in the brain ten times. This indicates interrelations between cGMP and GABA in the CNS. Figure 1; Table 1; References 10: 1 Bulgarian, 9 Western.

BULGARIA

EFFECTS OF APOMORPHINE, PIMOSIDE, THEOPHYLLINE, META-TOLYLCARBAMIDE AND DIAZEPAM ON THE PICROTOXIN CONVULSIVE-SEIZURE THRESHOLD

Sofia COMPTES RENDU DE L'ACADEMIE BULGARE DES SCIENCES in English Vol 29, No 11, 1976 pp 1703-1706

GEORGIEV, V., and MARKOVSKAY, V., Department of Pharmacology, Institute of Physiology, Bulgarian Academy of Sciences, Sofia

[Abstract] Dopamine affects convulsive-seizure reactions, their mechanism is regulated by the level of brain dopamine (DA), and by exogenously-administered DA, apomorphine (APO), and pimoside (PIMO). Picrotoxin (PICRO) is a central neurostimulant with convulsive effects, an antagonist of the receptors of the gamma-aminobutyric acid. It interferes with pre- and post-synaptic inhibition in the CNS. This makes it suitable for testing of the effects of various substances on the convulsive-seizure threshold (CST). The cyclic 3',5'-adenosinemonophosphate (3',5'-cAMP)

is connected with DA-energic synapses in the neostriatum. Diazepam (DIA) is a benzodiazepine derivative with anticonvulsive, antiepileptic and central myorelaxant properties, raising the picrotoxin convulsive-seizure threshold (PCST). Meta-tolylcarbamide (MTC) has similar properties. The effect of DA-ergic agonist APO, the DA-ergic antagonist PIMO, the inhibitor of phosphodiesterase theophylline (THEO), and the central neurodepressant DIA and MTC when used separately or in combinations on the PCST was studied by the authors. Independent administration of APO, DIA and MTC raises the PCST, while PIMO and THEO lower its values. Combined administration of APO and PIMO increases the rise of PCST by DIA and MTC. THEO reverses the effect of APO and MTC by reducing the PCST; it weakens the effect of PIMO and potentiates the effect of DIA. APO has anticonvulsive activity due to its effect on DA-ergic receptors. PIMO blocks the central DA-ergic receptors. THEO inhibits cAMP-phosphodiesterase. The DA-ergic system exercises inhibitory excitability threshold of the CNS, and is connected with the PCST. Table 1; References 5: 1 Bulgarian, 4 Western.

USSR UDC 612.86:578.086.3

REGENERATION OF THE OLFACTORY FLAGELLA AND RESTORATION OF ELECTROOLFACTOGRAMS FOLLOWING THE ACTION OF TRITON X-100 ON THE OLFACTORY MUCOSAE OF FROGS

Moscow TSITOLOGIYA in Russian Vol 19, No 1, Jan 77 Leningrad pp 33-39

BRONSHTEYN, A. A., and MINOR, A. V., Laboratory of Evolutionary Morphology, Institute of Evolutionary Physiology and Biochemistry, Academy of Sciences USSR, Leningrad and Laboratory of Physico-Chemical Principles of Reception, Institute of Chemical Physics, Academy of Sciences USSR, Moscow

[Abstract] The experiments described were made on the species Rana temporaria in April 1974 and in 1975. It was found that brief (1-5 min) irrigation of the olfactory mucosa with 0.1-0.15% solutions of Triton X-100 in Ringer's solution destroyed the olfactory flagella, but did not damage the olfactory bulb or its flagellar basal bodies. At the same time the electroolfactogram (total generator potential of the olfactory receptors) disappeared. It was also found that 2-3 hours following removal of the flagella from the Triton X-100, the flagella began to be regenerate, a process involving several stages and taking 3 or 4 days. During this time, the capability of the olfactory cells to generate electroolfactograms was restored. The authors conclude that receptive areas on the olfactory flagella are present. The results of the experiments are illustrated graphically.

USSR UDC 611.16.086.3:611.24

THE ULTRASTRUCTURE OF LUNG CAPILLARIES DURING THE ACCUMULATION OF AN ORGANOPHOSPHORUS INHIBITOR OF CHOLINESTERASE

Moscow TSITOLOGIYA in Russian Vol 19, No 1, Jan 77 Leningrad pp 28-32

OZIRSKAYA, YE. V., Laboratory of Comparative Biochemistry of Enzymes, Institute of Evolutionary Physiology and Biochemistry, Academy of Sciences USSR, Leningrad

[Abstract] Using rabbits as test animals, the author studied the ultrastructure of the basic elements of the aerohematic barrier at various periods following the administration of the organophosphorus cholinesterase inhibitor GA-95. It was shown that the basic regulatory component of the barrier is the endothelium of the lung capillaries, in which a micropinocytotic activation is observed at the start. Later on, depending on the release of material from the pulmonary tissue, there is a return to the

initial level. Change in the reactive properties of the endothelium, and in its plasma membrane, is tied in with sorption of the foreign substance on the surface of the lung capillaries.

USSR UDC 615.285.7-06 616.839

INFLUENCE OF ORGANOCHLORINATED PESTICIDES ON THE FUNCTION OF N-CHOLINORECEPTORS

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 143-146

DOROSHCHUK, V. P., candidate of medical sciences, Electrophysiology group (Professor S. I. Fudel'-Osipova, scientific chief), All-Union Scientific Research Institute of the Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Text] [English abstract provided by the source] Electrophysiological experiments on rats (registration of the respiratory muscle potentials) were used to study the effect of some synaptically active substances (atropine, tubocurarine, anticholinesterase substances, and narcotics) on the course of acute intoxication with polychlorcamphene, polychlorpinene and lindane, and also the character od development of tubocurarine paralysis of the respiratory muscles in animals subjected to chronic poisoning with small doses (1/20, 1/100 and 1/500 LD_{50}) of polychlorcamphene. It was found that tubocurarine block of the neuromuscular transmission in acute and chronic poisoning developed 2-2.5 times more rapidly than in the control. Soporofics control the developed convulsions. Atropine does not affect the course of poisoning while anticholinesterase agents sharply increase the convulsive state before the onset of depolarization. Results suggest that the main mechanism of action of organochlorinated pesticides is a sharp increase of sensitivity of N-cholinoreceptors to acetylcholine. Figure 1; Table 1.

CZECHOSLOVAKIA UDC 616.133:616.134.9)-008.3-0734.321.9

ULTRASONIC DETERMINATION OF CHANGES IN HEMODYNAMICS OF CAROTID AND VERTEBRAL CIRCULATION

Prague CASOPIS LEKARU CESKYCH in Czech Vol 115, No 52, 31 Dec 76 pp 1593-1601

NEVRTAL, M., KUBAK, R., ZOUHAR, A., JEHLICKA, K., and PUCALKA, A., Department of Pathological Physiology, Medical Faculty, J.E. Purkyne University, Brno; Department of Medical Electronics, Faculty of Electrical Engineering, Technical University, Brno; Neurological Clinic, Faculty Hospital Brno; Internal Department Okres Institute of Public Health, Vyskov

[Abstract] The doppler Ultrasonic directional flow velocity meter was used to measure blood flow velocities of 33 patients suffering from ischemic brain diseases, and of 56 healthy controls. The results were used to find whether such measurements may be used diagnostically to determine changes in hemodynamics. The changes in the values of the index of the resistance, and morphology of the recorded arteriovelocity-grams represent parameters which are reliable enough to allow their use for the evaluation of changes in the hemodynamics of intracranial and extracranial carotid and vertebral blood circulation of patients suffering from cerebrovascular diseases. The use of compression tests in the carotid bed allows the evaluation of the differential diagnostic values of inversion of the ophthalmic blood flow in the cases of occlusion or stenosis of the internal carotid artery. The ultrasonic method is a useful tool in the diagnosis of brain blood circulation disorders; the best method is the use of Doppler signals for the analysis of blood flow. It is recommended for use in neurological and internal departments of hospitals. Figures 15; References 15: 3 Czech, 12 Western.

USSR UDC 612.825.4

RESPONSES OF NEURONS IN THE FIRST SOMATOSENSORY REGION OF THE CEREBRAL CORTEX OF A CAT TO STIMULI OF DIFFERENT MODALITIES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 232, No 3, 21 Jan 77 signed to press 5 Oct 76 pp 714-717

MUSYASHCHIKOVA, S. S., and SINYAYA, M. S., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

[Abstract] The authors investigate the convergence of signals of the visceral and somatic systems in neurons of the somatosensory region of the cerebral cortex. The study is based on the responses of neurons in the focus of maximum activity (f.m.a.) of the first somatosensory region of the cerebral cortex in an anesthetized cat to stimulation of mesenteric and cutaneomuscular nerves. The mesenteric nerves and the nerves of the brachial plexus were electrostimulated by currents with twice the amplitude of the primary cortical response. Square pulses were used with duration of 0.2-0.3 ms and frequency of 2 Hz. The experiments were done as follows: 1) cells with stable background activity were tested separately for bimodal stimulation; 2) for the simultaneous action of both stimuli; 3) mesenteric nerves were given a brief stimulus against a background of continuous stimulation of nerves of the brachial plexus; 4) the nerves of the brachial plexus were briefly stimulated against a background of continuous stimulation of the mesenteric nerves. Analysis of the results shows that when the two stimuli interact, neurons of the f.m.a in the S1 region of the cerebral cortex retain their initial response to the visceral stimulus. With combined action of the stimuli, the neurons respond predominantly to stimulation of the mesenteric nerves with an accompanying increase of decrease in pulse activity. Most neurons in the S1 region were found to be polymodal with response to both stimuli; monomodal neurons that respond only to the visceral stimulus were rarely encountered. The f.m.a. of region S1 is mainly a polysensory zone with convergence of stimuli of different modalities in a single cell. Figures 4; References 7: 3 Russian, 4 Western.

USSR UDC 612.815.1:612.1:612.273:613.12

THE ROLE OF CHEMORECEPTORS IN ADAPTATION OF THE BODY TO HYPOXIA

Moscow USPEKHI FIZIOLOGICHESKIKH NAUK in Russian Vol 8, No 1, Jan/Mar 77 pp 44-54

AGADZHANYAN, N. A., and YELFIMOV, A. I., Moscow

[Abstract] Important literature dealing with evidence of the role of chemoreceptors in adaptation to environment is summarized. Most emphasis

is on the im ortance of the carotid sinus in regulation of lung ventilation. Efferent activity of the sinus nerve maintains constant afferent impulsation of carotid chemoreceptors and changes the sensitivity to various stimuli. The origin of the chemoreflex in the carotid sinus is related to such factors as CO_2 levels, blood supply, blood flow rate and metabolism. A peculiarity of the reciprocal reaction of the carotid sinus on arterial hypoxia, hypercapnia and hypotension is the decreased usage of oxygen. Substrates which lower the intensity of oxidative processes or which block ATP synthesis decrease the sinus chemoreceptor activity. Stimulation of the carotid sinus is accomplished by increases in adrenocortical hormones, insulin or adrenalin. Under low pO_2 and following denervation of the sinus arterial receptors, the secretions show characteristic increases to conditions including tachycardia, decreased lung ventilation, low blood pressure, or high altitude. Arterial chemoreceptors and the carotid sinus also seem to play a role in the genesis of pathologic conditions such as bronchial asthma. Continuing clinical and experimental studies of the functional roles of arterial chemoreceptors in processes of homeostatic adaptive reactions to environmental conditions will aid the search for new means of therapy. Studies of adaptation to mountainous conditions will further our knowledge of general resistance to various diseases. Tables 5; References 79: 39 Russian, 40 Western.

USSR UDC 611.132.2:611.839-08:612.015.1-08.599

CHOLINE ACETYLTRANSFERASE IN NERVOUS PLEXUSES OF A CAT'S MAJOR BRAIN ARTERY

Leningrad ARKHIV ANATOMII GISTOLOGII I EMBRIOLOGII in Russian Vol 72, No 1, Jan 77 signed to press 12 Jan 76 pp 40-43

MOTAVKIN, P. A., VLASOV, G. S., LOMAKIN, A. V., and MUKHINA, G. M., Department of Histology of the Vladivostok Medical Institute

[Abstract] Choline acetyltransferase, the enzyme which synthesizes acetyl choline, is a more reliable but less widely used indicator of cholinergic neurons than the antogonist acetyl cholinestrase. In view of the predominant localization of the former in terminal formations, a study was made to determine its activity in nervous plexuses along a cat's major brain artery. Plexuses appearing during a reaction to it were, however, found not as complete as those appearing during a reaction to acetyl cholinestrase. In the latter case a plexus formed by systems of longitudinal and transverse nerves was more contrastive and contained fibers with a uniform distribution of precipitate. Deep as well as superficial nerves were found, both large and branching ones, enveloping the walls of the major artery in a two-tier narrow-loop nerve shell. The method of doing this study had been originally proposed and subsequently perfected by A. M. Burt. Figures 2; References 17 (all Western).

USSR UDC 615.471:(615.361.12:615.361.24).014.417

AN APPARATUS FOR THE BIOLOGICAL PRESERVATION OF A HEART-LUNG ORGAN BANK

Moscow GRUDNAYA KHIRURGIYA in Russian No 1, Jan 77 pp 98-102

GERASIMENKO, N. I., deceased, and PRIYMAK, A. A., Second Surgical Department of the Central Scientific-Research Institute of Tuberculosis, Ministry of Health USSR

[Abstract] An apparatus has been developed for preserving isolated heart-lung organ banks over long periods of time. Such an organ bank with a functioning heart is placed inside this model RTC-3 container of a resuscitation-transportunit, immersed in a solution of blood substitute which can circulate through special plastic tubing at the properly maintained temperature. The air mixture, properly heated and humidified, is pumped in through an external mechanism. Both temperature and humidity are regulated electromechanically, with fully automatic physical-biochemical stabilization. The apparatus was tested in a 10-16 h experiment which produced sufficient data for evaluating the viability and the functional effectiveness of an isolated heart-lung organ bank under dynamic conditions. Figures 1; References 18: 8 Russian, 10 Western.

USSR UDC 615.47:681.2):061.6(47+57)

FREQUENCY CONVERTER FOR MAGNETIC RECORDING OF BIOELECTRIC PROPERTIES

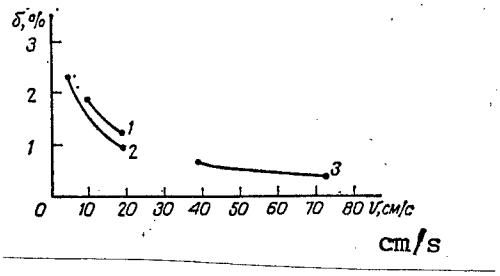
Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 8 Jun 76 pp 15-18

BULGAKOV, S. P., GUNDAROV, V. P., SOKOLOVA, A. M., SOMOV, V. G., and YUSHKIN, A. V., All-Union Scientific Research Institute of Medicine Instrument Manufacture, Moscow

[Abstract] In recent years frequency converters have been used in electrophysiological research and have made it possible to record information on one-to-two channel everyday magnetic tape. Appearance of such devices has been due to the absence of an adequate number of serially-released tape recorders suitable for recording bioelectric processes. A converter of this type which uses the method of frequency modulation (FM) has been developed at the authors' institute in 1967. With the use of tape recorder "Yauza-10" the converter permitted recording two-channel bioelectric signals in the 0.1-1000 Hz frequency range, and 40 db range with an error of 5-8%. The error in a FM converter designed by the authors is commensurate with the error caused by instability of the speed of

existing ordinary magnetic recorders. The relationship (obtained empirically and calculated on a computer) between the error of the converter and the recording rate for various types of magnetic recorders is presented in Figure 1.

Fig. 1. Error of converter as a function of the recording speed of various types of recorders
1. "Yauza-10"
2. "Jupiter-201"
3. "MEZ-28"



The present article gives data on developing an experimental series of FM converters. Blueprints of an FM modulator and demodulator were completed on operation amplifiers of the type UT401B. The dynamic range of signals being recorded is not less than 40 db. The basic design of the modulator is shown in Figure 2; of the demodulator, in Figure 4. Modulation characteristics are shown in graph, Figure 3. Figure 5 illustrates the through characteristics of the channel of the frequency converter. The converter permits recording of bioelectric processes in a frequency range of 0.1 to 1000 Hg with a conversion error of not more than 1.5%. The FM converter has been widely used to record EKG, EMG and EEGs. Figures 5; References 3 (Russian).

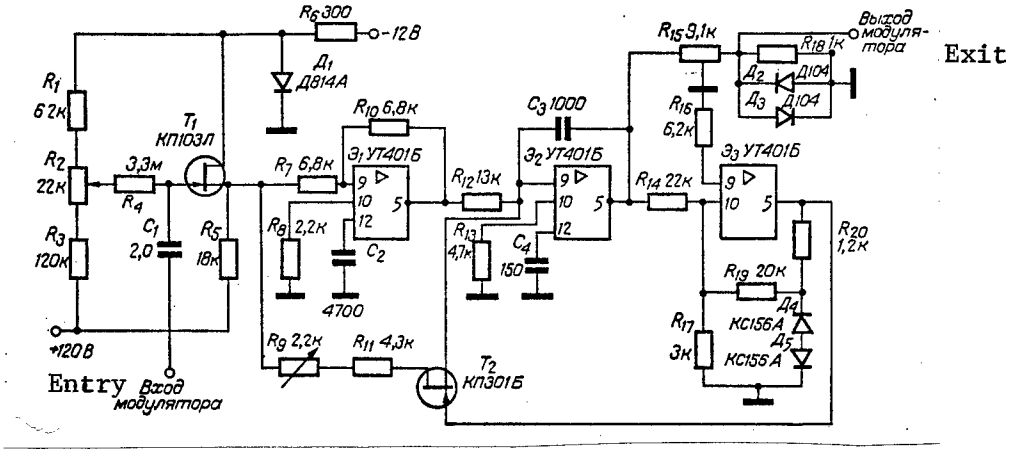


Figure 2: Fundamental design of the frequency converter

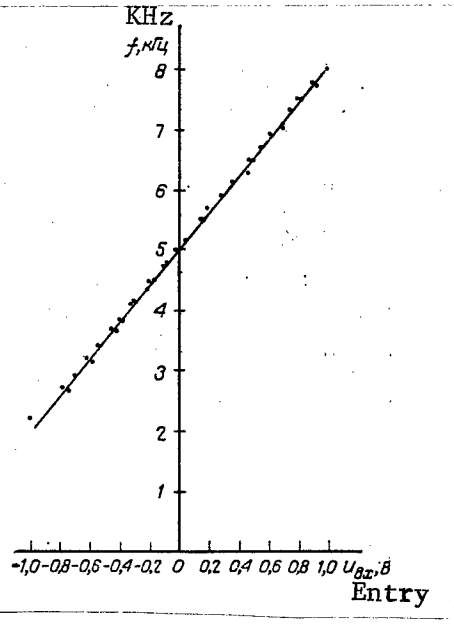


Figure 3. Modulation characteristics

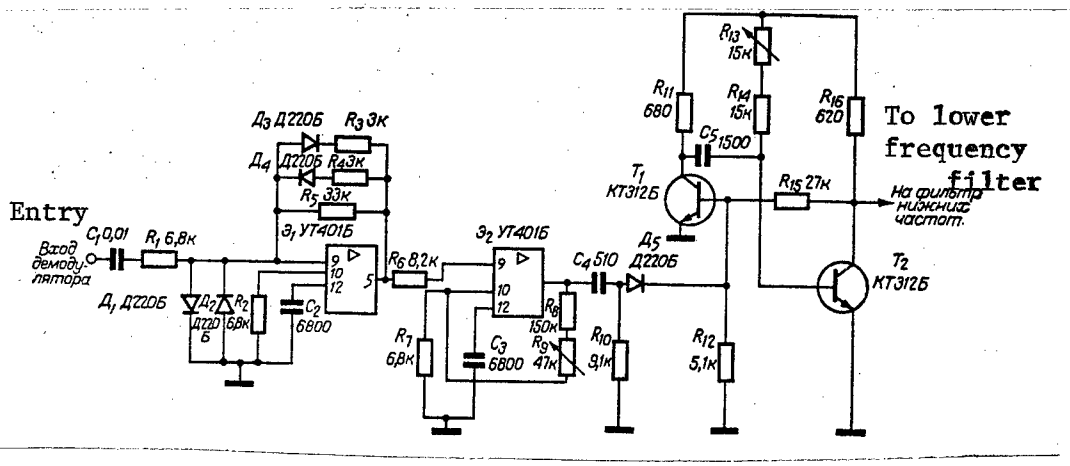


Figure 4: Fundamental design of the demodulator of the frequency converter

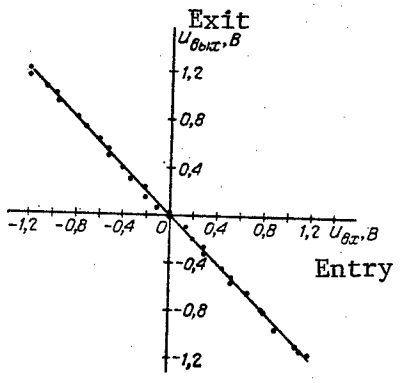


Figure 5. Through characteristics of the channel of the frequency converter

USSR UDC 615.471:616.152.21-073.55-78:681.785.3-791.2

REDUCTION OF ERROR IN MEASUREMENT OF PARTIAL PRESSURE OF OXYGEN IN SAMPLES OF BLOOD DURING WORK WITH POLAROGRAPHIC ANALYZERS

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 9 Feb 76 pp 37-39

AKHMETOV, A. G., STAKHOV, A. A., and USMANOVA, G. YA., Special Construction-Engineering bureau, "Medfizpribor," Kazan

[Abstract] The AZIV-2 instrument, which utilizes a polarographic method, has been developed in the USSR to measure partial pressure of oxygen. Measurement is within the ranges 0-100, 0-200, and 0-1000 mm Hg. Error is 2-2.5% of the maximum value of the measurement range. According to present procedures, calibration of the instrument is done at two points: the first point, the beginning of the scale, is established based on a solution with zero concentration of oxygen (solution of sodium sulfite), and the second, either for a gas mixture or for distilled water, on a saturated gas mixture; with this calibration values of partial pressures of oxygen in blood vary from actual content. To remove the error induced by a change in properties of the environment and also by scatter in size of the working chamber of the primary converter the authors suggest determination of the correction factor which has to be introduced when calibrating the instrument, and determination of the correct after each resetting of the primary converter. A formula for the calculation is suggested; emphasis is placed on technique dexterity. Table 1.

USSR UDC 576.8.085.12:578.086.3:595.142.253

AN ELECTRON MICROSCOPE STUDY OF THE STATOCYST OF THE LUGWORM ARENICOLA MARINA UNDER THE ACTION OF ACCELERATION, VIBRATION AND NOISE

Moscow TSITOLOGIYA in Russian Vol 19, No 1, Jan 77 Leningrad pp 120-122

KHARKEVICH, T. A., Laboratory of Evolutionary Morphology, Institute of Evolutionary Physiology and Biochemistry, Academy of Sciences USSR, Leningrad

[Abstract] The effect of acceleration, vibration and noise on the statocyst of the lugworm was studied. Redistribution of the mitochondria was observed in the receptor cells and especially in the supporting cells, and pigment granules were displaced toward the cuticle. There was disruption of the compactness of the fibrils of the supporting cells, and, in the receptor cells, an inclination and loop-type twisting of the kinocilia. The application of sound, further, produced dissociation of the kinocilia into individual fibrils, and broke up the continuity of the otoconia surface.

USSR UDC 616.833/.834-073.7-71

ELECTRODIAGNOSIS OF NERVE TRUNK DISEASES WITH NEUROTON-626 APPARATUS

Kiev VRACHEBNOYE DELO in Russian No 1, 1977 pp 110-112

ZAKHAROVA, S. A., Kiev Oblast Clinical Hospital

[Abstract] Observations were conducted of 96 men and 24 women with various diseases of the peripheral nervous system. To determine the character of the affection and properly select a method of treatment, electrodiagnosis with a Siemens Neurotron-626 was used, which permits determining the rheobase, chronaxy and accommodation capacity of the neuromuscular apparatus and investigating the Faraday electroexcitability and the dependence between the length and intensity of excitation (intensity-length curves). The apparatus permits determining more precisely the degree of disruption of neural conductivity and the functional state. The first signs of starting contracture of the facial muscles, not yet manifested clinically, were discovered and treatment was changed in time. With the apparatus, electrotherapy is possible--pulsed electrical stimulation of muscles, galvanization, ionophoresis, and faradization during weakness and atrophy of muscles after a prolonged position of rest.

HUNGARY

STUDY OF THE EFFECTS OF METEOROLOGICAL FACTORS ON HUMANS

Budapest NEPEGESZSEGUGY in Hungarian Vol 57, No 6, Dec 76 pp 357-362

CSISZAR, Gusztav, Dr., SZUCS, Erno, Dr., TOTH, Katalin, Dr., and LORINCZ, Imre, Dr., Hospital of the Municipal Council (director, physician-in-chief: CSISZAR, Gusztar, Dr.), Mateszalka

[Abstract] Over the 15-year period between 1960 and 1975, the cold and warm fronts were recorded and compared with the hospital statistics for diseases and deaths over the same period. Observations on healthy and sick individuals were also made over the test period, and the front changes were correlated with the disease course. The front-sensitive individuals were singled out. A total of 200 individuals were screened for this. The warm-front effects included restlessness, nervousness, initial output increase, reduced fatigue, hyperacidity, tachycardia, tachypnoe, base metabolism increase, increased body temperature, acidosis, leucocytosis, increased red blood corpuscle sedimentation, hyperglycemia, iodine-level increase, and blood-coagulation decrease. Generally, the cold front had opposite effects. It was judged that the effects of the fronts are not caused by the front temperature but by the associated physico-chemical phenomena such as air pressure change, ions, oxidant content, and magnetic factors. Figures 7; References 82: 43 German, 14 Hungarian, 3 Russian, and 22 Western.

HUNGARY

ANALYSIS OF INDUCED AND SPONTANEOUS ABORTIONS FROM THE POINT OF VIEW OF THE RESOLUTION ON POPULATION POLICY

Budapest NEPEGESZSEGUGY in Hungarian Vol 57, No 6, Dec 76 pp 327-331

ASZODI, Imre, Dr., and PAVLYAK, Pal, Dr., Health Bureau of the Council of Megye Borsod (physician-in-chief: SZABO, Istvan, Dr.) and the Family and Women's Protection Section (physician-in-chief: ASZODI, Imre, Dr., candidate of medical sciences) of the Hospital and Clinic of the District (director: SCHIEFNER, Gyorgy, Dr.), Miskolc

[Abstract] The induced and spontaneous abortions following the promulgation of Decree 4/1973 (Ministry of Health) were analyzed for a six month period in Megye Borsod beginning January 1974. This decree specifies the manner in which applications of induced abortions are evaluated. While there was an increase in the approved induced abortions following the promulgation of

the decree, it was judged that only meritorious applications were approved. the role of the health authorities in these procedures extends beyond the evaluation of the applications; it also includes the provision of anti-conception training and counseling. The parents of more than three children should be regarded as prime targets for this. Rubella-exposed pregnant women should receive special counseling. The evaluation of applications for induced abortion should also consider the opinion of the gynecologist concerned. Abortions of young women must be performed with particular care to ensure that no impediment for later pregnancies is created. Authorized abortion because of illness will of course not alleviate the illness; thus, the women involved must be referred for appropriate medical attention. In cases where pregnancy is contraindicated because of a preexisting illness, contraception rather than abortion in a subsequent pregnancy is the proper approach. The operations must be properly supervised to ensure that the intentions of the decree are followed. Tables 7; References 5: all Hungarian.

CZECHOSLOVAKIA UDC 616.379.008.64-036.86:615.361.37(437.6)"1965-1990"

INCREASED PREVALENCE OF DIABETES AND OF INSULIN CONSUMPTION IN THE SLOVAK SOCIALIST REPUBLIC DURING THE PERIOD 1965 TO 1990

Bratislava BRATISLAVSKE LEKARSKE LISTY in Slovak Vol 66, No 3, Sep 76 signed to press 20 Feb 76 pp 301-305

RAZUS, M., MIKULECKY, M., and SESTAK, A., Department of Internal Diseases, Medical Faculty, Comenius University, Bratislava, Ministry of Public Health of the Slovak Socialist Republic, Department for preventive treatment

[Abstract] Between the years 1965 and 1974 the number of diabetics in the Slovak Social Republic increased from 0.3 percent to 1.4 of the population; this represents an increase of 360 percent. By extrapolation of this statistically significant trend ($p < 0.05$) into the future we can expect with a probability of 95 percent that by 1990 there will be 100,000 to 200,000 diabetics in Slovakia, that is ten times as many as there were in 1965. This increase will be due mainly to the higher detection of cases of the diseases than that achieved in the past. The statistically highly significant ($p < 0.001$) but relatively lower growth of insulin consumption indicates that the increase in the case of the disease is mainly due to predominantly milder forms of the disease. The increase is partly due to an increase in the average age of the population. The incidence of the disease does not differ substantially from that in the rest of Czechoslovakia, or in the USA. Figures 2; Table 1; References 4: 3 Czech, 1 Western.

CZECHOSLOVAKIA UDC 061.3:681.3:002:614

COMPUTER EVALUATION OF HEALTH RECORDS

Prague CASOPIS LEKARU CESKYCH in Czech Vol 115, No 49-50, 17 Dec 76
pp 1545-1546

PAICHL, P., docent, MU Dr, and VRBOVA, H., MU Dr

[Abstract] The Section of Medical Cybernetics of the Czech Society of Internal Medicine and the Third Clinic for Internal Diseases of the Faculty of General Medicine of the Charles University at Prague organized the 3d State Conference on computer evaluation of health records in Prague on the 24th and 25th August 1976. Dr Paichl of the Clinic of Internal Diseases of the Charles University at Pilsen discussed the importance of computer storage of health records. Stach of the Institute for Medical Statistics of Prague described statistical analysis of medical records. Dr Kolouch from the Central Military Hospital in Prague reviewed computer analysis of large numbers of health records. Dr Brodan, Dr Kuhn and Dr Andel of the Research Center for Internal Diseases at Prague discussed difficulties of establishing automated clinical recordings in hospitals. Mr Kuran of the Institute for Public Health at Ostrava described the organization of the computer center of the Ostrava Institute for Public Health. The information available in these records covers social and medical records of the local population, preventive and general medical care of the population, epidemiological data, and economical aspects of the available medical services. Dr Salac from the Institute for Public Health at Trebic described an administrative record center of a hospital, and computer hardware available for such a center. Dr Havranek and Dr Pokorny of the Mathematical Center of Biological Institutes of the Czechoslovak Academy of Sciences reviewed computer development of hypotheses. Dr Ciganek and Dr Gliviak of the 2d Neurological Clinic of the Comenius University of Bratislava discussed recording and evaluation of neurological findings. Dr Rusnak of the Research Institute for Medical Bionics discussed problems encountered in recording and evaluation of medical data at the hospitals by Bratislava by the use of a central computer facility. Dr Skoda of the Psychiatric Research Institute of Prague discussed developments in computer evaluation of psychiatric findings. Dr Stransky, Dr Skaunic, and Dr Erben of the 1st Internal Clinic at Hradec Kralove described computer analysis of medical records in a clinic of internal diseases. Dr Kandus of the Institute for Public Health at Ostrava described the use of computer technique in epidemiological evaluation of chronic diseases of respiratory tracts. Dr Gerhart discussed the use of computers in continuous monitoring of health of employees of Iron and Steel Works of Eastern Slovakia. Dr Masek and Dr Rysanek of the Biochemical Hospital at Bulovka discussed clinical needs of cumulative laboratory findings. Dr Kraus offered a discussion of evaluation of records of pathophysiological breathing. Dr Srubar and Dr Bernatik described the use of an IBM 370 computer in the unit for intensive care for patients suffering from myocardial infarct. At the conclusion of the conference the importance of computers in medical services was stressed.

CZECHOSLOVAKIA UDC 681.3:616-07

COMPUTER ANALYSIS OF CONTINUOUS MONITORING OF HEALTH OF EMPLOYEES OF IRON AND STEEL WORKS OF EASTERN SLOVAKIA

Prague CASOPIS LEKARU CESKYCH in Czech Vol 115, No 49-50, 17 Dec 76
pp 1540-1542

GERHART, J., Institute of Public Health of the City of Kosice; State Institute of Public Health, Kosice-Saca; Department of Diagnosis, Kosice

[Abstract] The health records of the employees of the Iron and Steel Works of Eastern Slovakia maintained at the Public Health Institute of the Works have been stored in computer cards since 1972. Three fields of interest were analyzed by computer methods. These are: a) investigation of short term disabilities after which the employee is able to return to his original work assignment; b) investigation of diseases which force the employee to obtain an alternate working assignment; c) investigation of losses of ability to work as a result of occupational diseases. This is the most important indicator of the health care exercised by the industrial health authorities; the fewer and the older those who are no longer capable of work the better the health care.

USSR

ONSLAUGHT ON CANCER

Kiev PRAVDA UKRAINY in Russian No 53, Friday 4 Mar 77 p 4

VILENSKIY, YU.

[Abstract] The Academy of Sciences Ukr SSR (AS Ukr SSR) and the Ministry of Health of the Ukraine have set up a joint program, in the Tenth Five-Year Plan, to increase the efficacy of cancer control measures. Academician Secretary of the Office of the Department of Biochemistry, Physiology, and Theoretical Medicine (AS UkrSSR) V. I. Skok, and Chairman of the Scientific Council (MH UkrSSR) Professor O. A. Pyatak respond to an interview by a reporter from source newspaper, and point out the complex nature of cancer. This complex problem requires an attack on the broad scale envisioned by the program. To illustrate one aspect, Pyatak states that the hygienic part of the joint program is regarded as of very great importance. Thus, it has to reveal many unknown details of carcinogenesis, the prerequisites and conditions of formation of toxic substances during the use of certain food products. The role of food as a factor of the environment is not to be exaggerated; however, in the cancer prophylaxis plan we are as yet doing little on this aspect. Naturally, extended study will be devoted to carcinogens, even in other components of the environment, namely, the air, reservoirs, the soil, sewage, and production sites. Scientists don't have the right to forget the possible carcinogenic action of new chemical substances as soon as they are designated for use in industry, agriculture, and daily living. Institutions cooperating with the program include the Institute of Problems of Oncology, AS UkrSSR, the laboratories of the I. of General and Inorganic Chemistry, AS UkrSSR in Odessa and Kiev, the I. of Physical Chemistry, AS UkrSSR, the Kiev and Lvov Is. of Hemotology and Blood Transfusion, the I. of General and Communal Hygiene, MH UkrSSR, the Sector of Geography, AS UkrSSR, the Is. of Otolaryngology, of Endocrinology and Metabolism, and of Food Hygiene, MH UkrSSR, the All-Union Institute of Hygiene and Toxicology and Pesticides, Polymers, and Pastics, MG USSR, and others. The MH UkrSSR plans to create republican systems of cytological and endocrinological diagnosis, uniting pertinent departments and groups into Oblast oncological prophylactic dispensaries. Some inter-oblast centers will be opened for study of the different forms of cancer and localization of malignancies.

USSR UDC 340.6(47 + 57)

STATUS AND PROSPECTS OF SOVIET FORENSIC MEDICINE

Moscow SUDEBNO-MEDITSINSKAYA EKSPERTIZA in Russian No 1, 1977 pp 4-10

SAFONOV, A. G., Deputy Minister of Health USSR

[Abstract] Forensic medicine in the USSR is viewed as having great social significance, first in the prevention of crimes against the life and health of the public, and second in improving public health in general and in advancing the ethics of the Soviet physician. It is an indispensable element of the public health system, making a definite contribution to the prevention of accidents, poisonings and accidental death, and furthering the improvement of therapeutic-prophylactic work everywhere. The revelation of errors in the diagnosis and treatment of patients, the analysis of the causes of such errors, and the introduction of constructive proposals for their elimination are only a few of the beneficial functions of forensic medicine. In the past few years the Ministry of Health USSR, the Board of the All-Union Scientific Society of Forensic Medical Workers and the Scientific Research Institute of Forensic Medicine have taken a number of steps for the development and improvement of this branch of medicine. The period 1970-1975 saw the construction of buildings for three oblast bureaus, 55 supplemental facilities, 161 morgues; and the opening of 150 reception rooms in polyclinics--all in the interest of forensic medical work with out-patients. Republic, kray and oblast bureaus were given 78 new, large laboratories, 170 photolabs, and other facilities. During the Ninth Five-Year Plan, staff employee rolls in the forensic medical service increased by an overall 27.6%, and the corresponding laboratory staff by 31.3%, reflecting the increasing role of laboratory research, as well as the introduction of new methods in this branch of medicine. Training of specialists has been intense; the advanced-training institute alone turned out 2,000 specialists, as a result of which every third forensic medical expert falls into the higher or first category. The volume and complexity of operations have increased: in 1975, there was a 72.4% increase over 1970 in the number of objects investigated, with a 51.7% increase in the work of the forensic chemical divisions, and a similar increase in the work of the physico-technical divisions. Promptness in performance has been a prime objective; in 1975, demonstrations required an average of two weeks. During the past 5-6 years, in connection with forensic medical subjects, 37 doctoral and 168 candidate's dissertations have been defended, and 44 collections of scientific works, 28 monographs, 6 textbooks and 45 training manuals have been prepared, among other contributions. During the 1970-1975 period, 20 seminars, embracing 1,100 forensic medical specialists, were held. Some serious negative criticism is leveled at the forensic medical service in the Kazakh, Uzbek and Ukrainian SSR's, and in some of the oblasts of the RSFSR, in connection with a general lack of medical equipment (especially laboratory), faulty administrative control, planning and coordination, and failure to take immediate advantage of recent medical discoveries. In general the outlook of the forensic branch of medicine is very favorable.

USSR UDC 340.6:001.5

SCIENTIFIC RESEARCH IN FORENSIC MEDICINE AND ITS PROSPECTS

Moscow SUDEBNO-MEDITSINSKAYA EKSPERTIZA in Russian No 1, 1977 pp 25-31

PROZOROVSKIY, V. I.

[Abstract] Forensic medical research during the period 1971-1975 was built around thematic goals which will determine planning not only during the present Five-Year Plan but also for the next 15-20 years. About 35% of research was devoted to various questions of forensic medical traumatology, problems involved in unexpected death, the establishment of the time of death, the study of material proof, personal identification, and the like. Adoption of the latest scientific achievements in forensic medicine has remained a prime objective. The Scientific Research Institute of Forensic Medicine, in particular, has worked out and tested the methods of forensic cytology; this involves use of the results of advanced studies of bone tissue. The Institute has also studied the diagnostic value of variation in the activity of enzymes, and histochemical, spectral and other characteristics; as well as the use of infrared spectroscopy in determining the molecular composition of the blood. Its work has also taken in the value of macro- and microcells in identification and diagnosis, along with blood analysis and other physiological and chemical approaches. Central, immediate practical problems in forensic medicine are personal identification of victims, determination of time of death, determination of sex, and determination of manner of death, including weapons used. All of these are yielding to the techniques of histology, chemistry, radiology and other physical sciences.

USSR UDC 340:6:001.8(47 + 57)

THE GROWING SIGNIFICANCE OF FORENSIC MEDICINE AND EXPERTISE IN CRIME-CONTROL MEASURES AND THE REINFORCEMENT OF SOCIALIST LAW IN THE USSR

Moscow SUDEBNO-MEDITSINSKAYA EKSPERTIZA in Russian No 1, 1977 pp 10-15

GUSEV, S. I., Deputy Procurator General USSR

[Abstract] One essential condition for improving criminal investigation, including its initial or preliminary stage, is the enlistment of various sciences outside of criminology -- that is, calling upon experts and specialists, and controlling their activity. Here a significant role must be played by the top forensic medical expert of the Ministry of Health USSR, by the Scientific Research Institute of Forensic Medicine, and by

the All-Union Scientific Society of Forensic Medical Workers, in addition to the forensic medical departments of the institute. At the present time, investigators are equipped with a reasonable array of scientific devices for recording and collecting evidence (cameras, tape recorders, ultraviolet devices, etc.) and the procurator's offices of all republics, krays and oblasts have mobile criminological laboratories at their disposal; while basic directives and manuals for the conduct and professional improvement of investigators already exist and are being increased in number. The performance of the law-enforcement and investigative arms has in general been thorough and commendable. However, the fact remains that numerous serious crimes against life and health go undetected for long periods of time; this is often the result of neglect and errors in the course of investigation, but also the result in many instances of weaknesses in the work of the forensic medical organs. There are numerous cases in which public health officials do not guarantee at-the-site forensic medical examination of corpses, for example. In numerous cases conclusions as to death are not scientifically justified. In 1975, one out of every 10 initial diagnoses had to be discarded, and one out of 6 had to be supplemented. In the Armenian SSR, experts commonly do not make use of available supplemental laboratory equipment. The Kirgiz, Turkmen and Uzbek SSR are only slowly adopting the investigative methods approved by the Institute. In the Kazakh SSR, 3 oblast bureaus lack any biological facilities, 7 any histological, and 16 any physico-technical; and, to make matters worse, important criminal evidence and scientific assessment have to be transmitted by mail, with corresponding delays. The present weaknesses of criminal investigation in the Soviet Union are essentially organizational and procedural; corrective measures are the responsibility primarily of the Ministry of Health USSR.

USSR UDC 616-057:656,13)-082(470.21-25)

SOME QUESTIONS ABOUT MORBIDITY AND THE ORGANIZATION OF MEDICAL CARE FOR AUTOMOBILE TRANSPORT WORKERS (BASED ON MATERIALS FROM MURMANSK)

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, 1977 pp 35-38

LIPKIN, YU. YA., and GOMEL'SKAYA, G. L., Department of Social Hygiene and Organization of Public Health, First Moscow Medical Institute imeni I. M. Sechenov

[Text-Russian language abstract supplied by source] The broad use of auto transporting in the national economy and its further expansion, as provided by a decision of the 25th Congress of the Communist Party of the Soviet Union, are leading to a significant rise in the number of people engaged in this branch of industry, especially in areas in the Soviet north. This

situation and, also, the high level of mobidity in these oblasts, are the reasons for the urgency of the tasks to assure fit working conditions for these people. According to Murmansk data, the morbidity index for 5 years was, on the average, 112.4 cases and 1350.1 days per 100 autobus workers, and, 111.6 and 1294.6, respectively, for truck motorpool workers. A negative effect on health is caused by occupational factors (low frequency vibration, a strained position at the work site, physical and emotional stress, and so on), and, also, by the organization of the work (irrational work schedules, and frequency and duration of trips). Differences were noted in the level of morbidity as a function of the type of auto, degree of chilling, and site of residence of the workers before arrival in the North. Analysis of the causes of the morbidity is making it possible to evolve the most important measures to lower it. Among these, organization of medical aid requires especial attention. Analysis of the morbidity of the autotransport must pay attention to selection of personnel for work in this kind of an occupation. No references.

USSR UDC 616-005.4:616.12-008.331.1

THE MORBIDITY OF ISCHEMIC HEART DISEASE AND HYPERTENSION AMONG PERSONS ENGAGED IN MENTAL LABOR

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 12, 1976 pp 3-5

CHEBOTAREV, D. F., KORKUSHKO, O. V., and KOTKO, D. N., Institute of Gerontology, USSR Academy of Medical Sciences

[Abstract] A survey was made of 785 persons, 40-59 years of age, engaged in mental labor at some large Kiev enterprises, to ascertain the state of their cardiovascular system. The diagnosis criteria were positive answers to the Rose Questionnaire (from 3 to 9), as well as electrocardiogram data according to the categories of the Minnesota Code. It was ascertained that ischemic heart disease occurs rather extensively among persons engaged in mental labor, the morbidity rising with age; the incidence is higher among men than among women. It has been found that hypertension also occurs rather extensively among persons engaged in mental labor. Figures 2.

USSR UDC 616.132.2-008.64:(574-20)

EPIDEMIOLOGICAL STUDY OF ISCHEMIC HEART DISEASE AMONG SOME POPULATION GROUPS OF THE KALININ RAYON OF ALMA-ATA CITY (ACCORDING TO ELECTROCARDIOGRAPHIC DATA)

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 12, 1976 pp 5-6

SANOV, S. S. and SATPAYEVA, R. A., Department of Hospital Therapy of the Therapeutic Faculty [in charge, Prof. R. A. Satpayeva], Alma-Ata Medical Institute [rector - Prof. K. M. Maskeyev]

[Abstract] A study was made of the prevalence of ischemic heart disease among the inhabitants of the Kalinin rayon in accordance with a scheme developed by the Institute of Cardiology, Academy of Medical Sciences USSR. A special chart, formulated according to the WHO pattern, was filled in for each person. This chart included the standard Rose Questionnaire (1962). It was found that the prevalence of ischemic heart disease among men 20-59 years of age was 10.06%. The incidence of the illness increased with age from 0.58 in the 20-29 years group to 18.12% in the 50-59 years group. A greater prevalence of ischemic heart disease was observed among persons engaged in mental labor with intense nervous stress (23.2%), than among those without nervous stress (8.4%), and there was a greater prevalence of this disease among physically active persons with intense stress (8.0%) than among those without it (5.0%).

USSR UDC 616-005.4

THE PREVALENCE OF ISCHEMIC HEART DISEASE IN OCCUPATIONAL GROUPS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 12, 1976 pp 6-9

ARYKOVA, R. I., SANOV, S. S., MAYKOTOVA, A. M., and IZTLEUOVA, K. K., Department of Hospital Therapy of the Therapeutic Faculty [in charge, Prof. R. A. Satpayeva], Alma-Ata Medical Institute [rector - Prof. K. M. Maskeyev]

[Abstract] An epidemiological study of ischemic heart disease among men residing in the Kalinin, Oktyabr', and Lenin rayons of Alma-Ata has been conducted in order to ascertain the influence of the physical or mental nature of their work upon the prevalence of ischemic heart disease among them. Study of the frequency of ischemic heart disease and of the forms in which it is manifested, namely myocardial infarction, stress stenocardia, and the painless form, has not made it possible to ascertain a definite correlation between the prevalence of ischemic heart disease and the physical or mental nature of one's occupation. Tables 2; References 1 (Russian).

USSR UDC 616.12-008.331.1+616.2.005.4:616.1(574-20)

METEOHELIOGEOPHYSICAL FACTORS AND THE COURSE OF HYPERTENSION AND ISCHEMIC HEART DISEASE UNDER CONDITIONS OF THE CITY OF ALMA-ATA

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 12, 1976 pp 9-12

SATPAYEVA, R. A., UTEGALIYEVA, G. I., and BOGDANOVSKAYA, G. K., Department of Hospital Therapy of the Therapeutic Faculty [in charge, Prof. R. A. Satpayeva], Alma-Ata Medical Institute [rector - Prof. K. M. Maskeyev]

[Abstract] A study was made of the influence of the heliogeophysical and climatic factors of Alma-Ata upon the clinical course of various stages of hypertension and ischemic heart disease, the frequency of the origination of hypertensive crises, stenocardia attacks, and myocardial infarction. The clinical and functional indices of the cardiovascular system among the respective patients were compared, and therapeutic and prophylactic measures were developed. A seasonal dynamic relationship of the admission of patients to the hospital and their application to the Central Station of Rapid Medical Aid has been established. Unfavorable months and seasons, weather classes, and synoptic fronts are identified. References 12 (Russian).

USSR

HYGIENIC EVALUATION OF THE OPERATION OF A TYPICAL FILTERING STATION IN THE CITY OF PAVLODAR USING LOCAL KERAMZIT POROUS CLAY FILLER IN THE FILTERS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 23-24

SEREMENKO, L. I., and YUPATOV, P. M., Pavlodar City Sanitary and Epidemiological Station

[Abstract] Keramzit, manufactured by the Pavlodar Keramzit Gravel Plant, is a granulated porous material produced by roasting a clay raw material in special furnaces. Pavlodar keramzit was tested as a filtering material, with daily water quality analyses to determine the comparative performance of the keramzit filter and a sand-gravel filter. Both filters produced water which met the State Standards for drinking water, but the keramzit filter transmitted water 20 to 30% faster than the sand-gravel filter, increasing the throughput of the filter station to 105,000 m^3/day. Table 1.

USSR

OPERATION OF CENTRALIZED STERILIZATION LABORATORIES IN ALMA-ATA

Alma-Ata ZDRAVOOKRANENIYE KAZAKHSTANA in Russian No 1, Jan 77 pp 25-26

AL'ZHANOV, A. G., GOLUBEVA, S. YA., and MARKONRENKOVA, L. D., Department of Disinfection, Ministry of Health Kazakh SSR, and Alma-Ata City Disinfection Station

[Abstract] There are at present five centralized sterilization laboratories in Alma-Ata, performing sterilization of hypodermic syringes, surgical instruments, etc., for medical institutions throughout the city. Two more are to open in 1976. Instruments are sterilized in a bath by vibration for 5 to 10 minutes in a complex solution of hydrogen peroxide and a detergent. Combined washing and sterilization is effective from the standpoint of economy as well as provision of a high level of sterilization, which has resulted in a sharp reduction of post-surgical complications and post-injection abscesses in the city.

HUNGARY

INFORMATION ABOUT THE NECESSITY OF NEPHROLOGIC CARE OF CHILDREN

Budapest NEPEGESZSEGUGY in Hungarian Vol 57, No 6, Dec 76 pp 344-347

SZELID, Zsolt, Dr, Hospital and Clinic of the Council of Megye Gyor-Sopron (director: HORVATH, Otto, Dr); Pediatric Department (physician-in-chief: MEHES, Karoly, Dr)

[Abstract] Children treated for kidney diseases at the author's clinic in 1971, 1972, and 1973 were recalled for follow-up examination. A total of 214 patients were involved. Tests were carried out to determine blood pressure, routine examination, urine protein, sediment, and body weight. Additional tests were made in the case of certain diseases. The patients were classified as free of complaints, having complaints, and requiring medical attention. Most frequently encountered problems involved infections of the urinary tract (primarily bacteriuria). There were developmental disorders of the urinary tract in a relatively small number of patients (vesico-uretheral reflux, hydronephrosis, megalourether, urethro-rectal fistula, and the like). Glomerulonephritis was also encountered. Among the children examined, 39 percent required treatment or further observation (all were free of complaints). The data obtained in this study indicate the importance of a unified child-nephrological care countrywide. This is preferably carried out by the child-urological departments of the major regional hospitals. Tables 2; References 24: 5 German, 9 Hungarian, and 10 Western.

USSR UDC 616.12-008.331.1-085.835.5

AEROSOL THERAPY OF ACUTE HYPERTENSIVE STATES AND CONTROL OF THE EFFECT OF THE TREATMENT

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 1, Jan 77 signed to press 31 Mar 76 pp 62-65

GELIS, L. G., and SIDORENKO, YE. R., Problem Laboratory of Cybernetic Methods of Diagnosis and Biocontrol of the Minsk Medical Institute (Scientific Director, G. I. Sidorenko)

[Abstract] Rapid action ganglioblocking agents, arfonal and gigroniy are used for therapy for hypertension; they are highly active and have an extremely short latent period. Use in emergency is limited because of danger of overdosage. The authors have administered these agents to 137 patients using an ultrasound inhalator TIR 1 SI-2. The aerosols induce a prompt hypotensive action suitable for emergency use especially when intravenous administration of hypotensive drugs is difficult and sterile conditions are absent. Skin temperature monitoring can serve as a criterion of adequacy of treatment. Figures 2; References 6 (Russian).

USSR UDC 615.471:616-073.584-71:621.384.8

STATUS AND PROSPECTS OF DEVELOPMENT OF MEDICAL MASS SPECTROMETRY

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 23 Mar 76 pp 6-12

LEVSHANKOV, A. I., OZEROV, L. N., PAVLENKO, V. A., PUSHKINA, M. A., SLUTSKIY, M. YE., and UVAROV, B. S., Military Medical Academy imeni S. M. Kirov; Special Construction Bureau of Analytical Instrument Manufacture, Academy of Sciences USSR, Leningrad

[Abstract] The first Soviet model of a medical radiofrequency mass spectrometer was produced in 1965 in the Special Construction Bureau of Analytical Instrument Manufacture, Academy of Sciences USSR. Clinical testing of the model and its further improvement made it possible to produce a serial medical mass spectrometer MKh 6202 which was introduced into production at the Sumsk Plant of Electron Microscopes imeni Fiftieth Anniversary of the VLKSM (All-Union Lenin Young Communist League). The authors present a picture of the MKh 6202, and a functional diagram of its operation. A table shows the comparative features of Soviet M-S instruments and selected models from England, USA-Holland, USA-Sweden, used in biological, physiological, and medical research. Another table compares the MKh 6202 with other Soviet

models (GUM-2, MMG-7, Azotograf A-2m) -- for rapid gas analysis of inspired and expired air. The MKh 6202 is believed to be promising especially for gas exchange assay. Figures 4; Table 2; References 12: 6 Russian, 6 Western.

USSR UDC 617.7-073.5

FEATURES OF OPTIC HOLOGRAPHY IN OPHTHALMOLOGY

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 7 Jul 76 pp 12-15

KOPEYKO, L. G., All-Union Scientific Research and Testing Institute of Medical Technology, Moscow

[Abstract] The advantages of holography, especially its speed of use, are noted, and some problems in its use in ophthalmology. The author has identified optimum wave lengths for recording eye structure, based on use of the property of selectivity of the optic media and of the eyeball, and optimum exposure time to the laser light. Optimum wavelengths found were below 300 nm, and, also, 2000 and 2500 nm for corneal tissue; 400 nm for lens tissue; 500 nm for the retina. Allowable exposure time varies with respect to recording schemes used: for schemes, stable in the interference sense, a two-ray scheme with a base beam, a scheme in oncoming beams (ruby laser), the permissible exposure time, for example, for the retina, is 2.3×10^{-4}s; for schemes, stable in the photographic sense, schemes with a local base beam, the allowable time for the anterior surface of the cornea is 0.17s, for the anterior surface of the lens, 0.23s, for the retina, 0.27s. The author suggests that his data can be used to assess temporal-spatial and power qualities of laser units and their use in holography of the human eye. References 11: 4 Russian, 7 Western.

USSR UDC 615.472:616.61-008.1.78

EXTRACORPOREAL HEMOCORRECTION DEVICE

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 20 May 76 pp 43-45

EVENTOV, V. L., IPPOLITOV, V. P., SUTYKO, A. D., SEPP, O. N., LEVITSKIY, E. R., All-Union Scientific Research Institute of Clinical and Experimental Surgery, Ministry of Health USSR; First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] Development of apparatus for hemodialysis is proceeding in two basic directions, viz., creation of central systems serving 4-20 patients, and creation of individual "artificial kidney" apparatus. All forms of individualized apparatus, with the exception of the AIP-140 and "DIAKHRON-80", are fully automated and control the temperature of the dialyzing solution, speed of its flow and its pressure, and, also, loss of blood into the dialysate or pressure in the bleeding channel. Apparatus, fitted with a generator of dialyzing solution, also controls the electroconductivity of the solution. The size of these instruments has been a drawback. The authors have developed an artificial kidney apparatus to improve the features for controlling and regulating blood composition in the extracorporeal loop; it provides regeneration of the dialyzing solution, prevents loss of bodily amino acids and reduces consumption of the dialyzing solution. A photograph and diagram of their device are presented. The unit is intended for treatment of chronic renal insufficiency. Figures 2; No references.

USSR UDC 615.465:669.295.5

USE OF TITANIUM ALLOYS FOR MEDICAL INSTRUMENTS

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 29 May 76 pp 50-55

FEOFILOV, R. N., CHIRKOV, V. K., and LEVIN, M. V., All-Union Scientific Research Institute of Medical Instruments, Kazan

[Abstract] The authors propose areas of utilization of titanium and its alloys for making various medical instruments. Tabulation of fields of application is presented (retraction, clamping and fastening, non-magnetic instruments, bone attachment, ultrasound instruments). Detailed consideration is given of these applications, with examples of instruments, evaluation of titanium in their manufacture, acceptability, current status and recommendations. Because of insufficient hardness and resistance to wear,

the titanium alloys are not recommended for thin cutting edge instruments. Because of insufficient strength, low resistance to wear, and substandard modulus of electricity, the alloys should not be used to make many types of clamping medical instruments; susceptibility to corrosion makes the alloys not suitable for handles. They are good for bone joining, retractors (spatula and speculum types), some non-magnetic pincers and ultrasonic instruments. Table 1; References 15 (Russian).

USSR UDC 616.33-005.1-089-072.171-71

DIATHERMOCOAGULATION THROUGH AN ENDOSCOPE FOR ARRESTING GASTRIC HEMORRHAGE

Leningrad VESTNIK KHIRURGIYA in Russian Vol 118, No 2, Feb 77 pp 25-28

PANTSYREV, YU. M., GALLINGER, YU. I., SULEYMANOV, B. R., and PROKHOROVA, I. A., Department of Hospital Surgery and Anesthesiology, Second Moscow Medical Institute imeni N. I. Pirogov

[Abstract] The authors cite the earlier contributions of Western authors to this problem (Youmans, 1970; Blackwood and Silvis, 1971; Kock, et al., 1973; Papp, 1974; Salmon, et al., 1959.) Their own work on gastric coagulation was initiated experimentally on dogs, using the "Electroknife M-57" for diathermocoagulation. In the monoactive procedure, they used a probe with a working head diameter of 2 mm. The passive electrode was attached to the previously prepared surface of the femur. Biactive coagulation was carried out by an electrode with a separation 2 mm between the terminals. The monoactive method was found to arrest bleeding, reliably and swiftly, from the mucous and vessels of the sub-mucous layer. Rapid hemostasis required high output power since the hemorrhaging blood decreased the coagulating effect of the diathermy. The biactive method of coagulation achieved hemostasis reliably and swiftly in all models of hemorrhaging including that from vessels after cutting the entire wall of the stomach near the greater curvature. The monoactive way, in comparison with the biactive, produced more extensive lesions of the gastric wall both on the surface and in depth. The biactive method appears to have a better hemostatic effect. The technique was used on 19 patients. The authors suggest use of the technique for aged and debilitated patients in the operative high-risk group; endoscopic diathermocoagulation should be used in therapeutic institutions which possess experience in surgery and in emergency endoscopic examination of the upper areas of the GI tract. Photos are presented of electrodes for endoscopic diathermocoagulation. Figure 1; References 5 (Western).

USSR UDC 616.711-018.3-002)-08:(616.721.1-089.87:615.837.3

ULTRASONIC DISCECTOMY IN INTERVERTEBRAL OSTEOCHONDROSIS

Leningrad VESTNIK KHIRURGIYA in Russian Vol 118, No 2, Feb 77 pp 75-77

DEMICHEV, N. P., professor, Department of Traumatology, Orthopedics, and Military Field Surgery, Astrakhan Medical Institute imeni A. V. Lunacharskiy

[Abstract] In the last five years the orthopedic clinic of the Astrakhan Medical Institute--which employs the facilities of the First and Second Oblast Clinical Hospitals--has operated on 42 patients with lumbar osteochondrosis by anterior approach; since 1975 it has used ultrasound discectomy which is said to have undoubted superiority over the classic mallet procedure for disc removal. The operation is performed under endotracheal narcosis with the patient on the right side. The intervention is performed in four successive stages. Discectomy is performed with an ultrasonic saw (URSK-7N, which works at a frequency of 20-50 kHz, wave amplitude 40 microns, and cutting speed from 1.5 to 3 cm/min). Twelve patients, aged 22 to 48 (11 men and 1 woman) were operated upon, with removal of 22 degenerating intervertebral discs. In one of the patients, the mallet technique was also used. The method is described as easily performed, the filed plane is even, and bleeding is minimum. Drawings illustrate the operative stages. Figures 6; no references.

USSR UDC 616.132.2-008.64-036.11-084.88

PRE-HOSPITAL STAGE IN THE ORGANIZATION OF EMERGENCY AID TO THE PATIENT WITH ACUTE CORONARY INSUFFICIENCY

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 1, 1977 pp 19-22

PERMYAKOVA, M. K., and BUK, T. N., Scientific Organizational Section of the Moscow City Scientific Research Institute of Rapid Aid imeni N. V. Sklifosovskiy

[Abstract] The increasing morbidity in ischemic heart disease, its epidemic character in the last 10 years, and the high mortality from myocardial infarction have drawn more and more attention to this problem. The present report considers organization of emergency aid to acute coronary patients at rapid medical aid stations and in the polyclinic. The basic task is to bring the emergency medical assistance close to the people, to cut down the time between onset of acute sickness and the furnishing of highly-qualified medical assistance. An analysis is presented of diagnosis of myocardial

infarction for 1970-1975 and a survey is made of the cause of delay in hospitalization of acute myocardial infarction patients as a function of the times of referral to the physician, and the time periods for diagnosis of various forms of acute coronary insufficiency. A study of the work experience of cardiological brigades has shown the superiority of this, the cardiological brigade, method for furnishing the specialized medical assistance. In the last 10-15 years about 500 specialized brigades have been set up, and this number includes 200 cardiological brigades. No references.

USSR UDC 631.22.001.2

EFFICIENCY OF CONTEMPORARY DESIGN DECISIONS OF ANIMAL-HUSBANDRY BUILDINGS

Moscow ZHIVOTNOVODSTVO in Russian No 7, 1976 pp 66-72

MALKOV, I. G., Chief Design Engineer of the Belorussian Scientific Research Institute of the State Planning Institute for Rural Housing and Civil Engineering Construction, and PLYASHCHENKO, S. I., professor, Chief of the Zoological Hygiene Department of the Belorussian Scientific Research Institute of Livestock Breeding

[Abstract] Concentration of animal husbandry on large farms and complexes requires a new approach to design and construction of the principal buildings. Concentration of these buildings is increasingly employing the so-called monoblock design. Cow-sheltering monoblock structures, in operation or under construction in the Belorussian SSR, are analyzed by the authors. Monoblocks are of two types: one type is for maintenance of cows that are at various stages of the biological and technological cycle, while the other type is exclusively for lactating cows. Distribution of the production area in the buildings varies in accordance with the designation. Figures 1; Tables 4.

Table 1: Allocation of the production area of monoblocks based on intended use

1. Совхоз	2. Вместимость моноблока (скотомест)	3. В том числе занимают							
		a. дойные коровы	b. сухостойные коровы	c. стельные и первотелки	d. предродильное отделение	e. родильное отделение	f. коровы на раздое	g. профилакторий	h. резерв
"Большевик"	1014	640	—	234	—	80	—	60	—
"Советский"	1017	540	162	—	—	89	—	60	166
"Малеч"	1000	900	—	—	—	—	—	—	100
"Красный бор"	1097	730	157	—	60	—	78	72	—
"Коммунист"	400	400	—	—	—	—	—	—	—

Key:

1. Sovkhoz
   "Bol'shevik"
   "Sovetskiy"
   "Malech"
   "Krasnyy bor"
   "Kommunist"
2. Monoblock holding capacity (cattle places)
3. Including places occupied by
   a-milch cows
   b-dry cows
   c-pregnant cows and with first calf
   d-preconfinement section
   e-confinement section
   f-cows for milk-yield increase
   g-prophylaxis section
   h-reserve

Table 2. Character of the cow-milking system with the use of the UDE-8 assembly

1. Совхоз	2. Численность коров	3. Содержание животных	4. Количество доильных установок УДЕ-8 (шт.)	5. Дальность пути животных на дойку (м)	
				a. максимальная	b. средняя
«Большевик»	640	Стойловое	2	118	68
«Советский»	540	»	2	105	58
«Малец»	900	Стойлово-выгульное	4	148	84
«Красный бор»	730	То же	4	120	65
«Коммунист»	400	Стойловое	1	97	54

Key:
1. Sovkhoz (see Table 1)
2. Number of cows
3. Maintenance of animals
   - stall
   - "
   - stall-pasture
   - same
   - stall
4. Number of UDE-8 milking assemblies (ea)
5. Distance traveled by animals for milking (m)
   a. maximum b. average

Table 3. Allocation of useful area of monoblocks based on functional purpose

1. Совхоз	2. Основное помещение, предназначенное для размещения животных	3. Кормовые проезды или кормовые тамбуры	4. Доильные блоки с пунктами искусственного осеменения	5. Бытовые помещения
«Большевик»	5642,2 / 84,0	67,8 / 1,0	586,8 / 8,7	423,6 / 6,3
«Советский»	6729,0 / 80,0	493,0 / 5,8	797,0 / 9,4	405,9 / 4,8
«Малец»	6097,0 / 71,9	377,5 / 4,4	1633,8 / 19,2	380,4 / 4,5
«Красный бор»	6860,3 / 75,4	573,6 / 6,2	1039,1 / 11,3	651,4 / 7,1
«Коммунист»	2486,7 / 77,6	208,9 / 6,6	337,0 / 10,5	164,1 / 5,3

6. Примечание: числитель — м²; знаменатель — %.

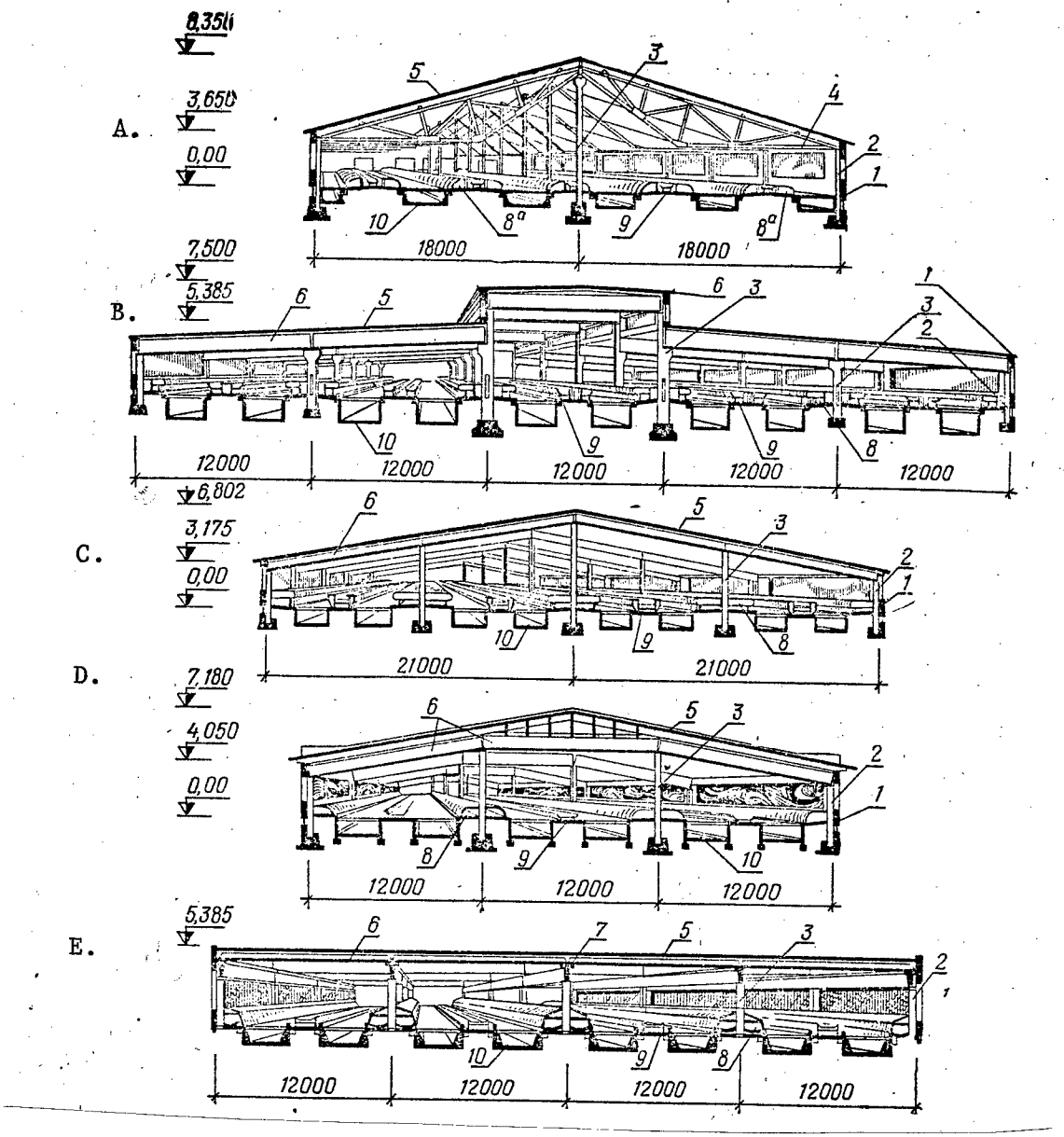
Key:
1. Sovkhoz (see Table 1 and 2)
2. Principal building designated for placement of animals
3. Feeding passages or feeding vestibules
4. Milking units with artificial insemination points
5. Utility buildings
6. Note: numerator-m^2; denominator -%

Table 4. Technical-economic indices of the monoblocks

1. Совхоз	2. Полезная площадь моноблока (м²)		3. Строительный объем (м³)		4. Стоимость (тыс. руб.)		5. Стоимость моноблока в расчете на одно ското-место (руб.)
	общая	в расчете на одно ското-место	общий	в расчете на одно ското-место	общая	оборудования	
"Большевик"	6720,4	6,6	40157,0	39,6	716,1	171,2	706,1
"Советский"	8424,9	8,3	57239,3	56,3	828,2	151,0	814,3
"Малец"	8488,2	8,5	42424,0	42,4	786,2	86,9	786,2
"Красный бор"	9124,4	8,3	46550,3	42,4	1022,5	118,2	932,0
"Коммунист"	3196,7	8,0	11965,8	29,9	233,2	23,9	583,0

Key

1. Sovkhoz
   (see Tables 1,2, and 3)
2. Useful area of monoblocks (m^2)
   total per stock placement unit
3. Structural volume
   total per stock placement unit
4. Cost (thousand rubles)
   total equipment cost
5. Cost of monoblock per stock placement unit (rubles)



Interiors of animal-husbandry monoblock buildings at the Sovkhoses: A. "Bol'shevik"; B. "Malech"; C. "Sovetskiy"; D. " Kommunist"; E. "Krasnyy Bor".

1--exterior panel wall; 2--column of exterior wall; 3-- interior column; 4-- metal girder; 5-- combined covering; 6--beam; 7--girder; 8--stall separator; 8a--sections of the building for allocating cows (tethered maintenance); 9--feeder; 10--subfloor channel for manure removal.

USSR UDC 636:614.84

FIRE PREVENTION ON STOCK AND POULTRY FARMS

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 85-87

SHURIN, YE. T., Higher Engineering Fire-Control School, Ministry of Internal Affairs USSR

[Abstract] During the past few years fires in livestock quarters have accounted for 2.3% of all fires in the Soviet national economy, and this figure must be understood in the light of the fact that 17.3% of large fires (those entailing losses of 30,000 rubles or more), or one in five, are represented. The two most common causes are faulty installation and operation of electrical systems, and the careless tending of open flames (22.8 and 21.4%). Other physical sources are stoves, the smoke exhausts of feed-processers, built-in boilers, etc. (15.3%). In actual numerical count, fires are least frequent at night; but on the other hand they comprise 46.04% of the "large" category, and hence represent a large part of the economic loss. The fact that many large night fires have been observed and reported from great distances (as in the Arkhangel'sk, Leningrad and Moscow oblasts) points up the need for better observation and alarm systems. Cattle are especially hard-hit by large fires, which comprise 85.5% of the total number of fires and account for 43% of total losses. Evacuation exits for the most part are structurally sound, but in present conditions are often blocked in various ways so that cattle deaths are correspondingly high. In the case of poultry farms, the fault lies in the structure and material of buildings (69.8% of fires occur in buildings of fire-resistance groups IV and V, only 30.2% in groups III or lower). In any case, a very low concentration of smoke is sufficient to destroy poultry stock. The following diagrams illustrate the current (1971-1975) situation regarding numbers and causes of fires on Soviet stock and poultry farms.

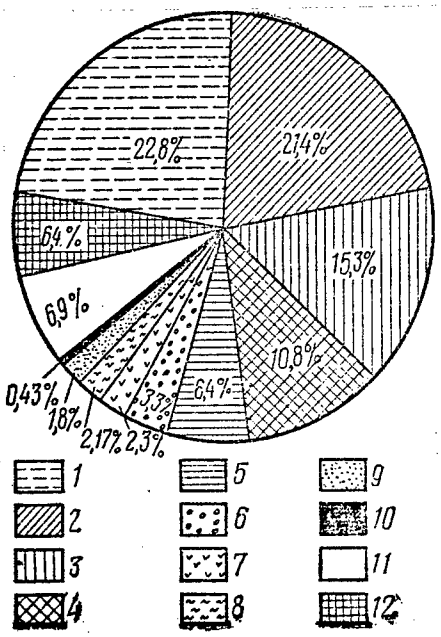


Figure 1. Causes of fires in livestock barns during the period 1971-1975

Key:

1. inadequacy of nonobservance of rules for the operation of electrical equipment and lighting facilities;
2. careless use of open flame in cooking and other operations;
3. improper installation and operation of stoves and exhausts;
4. children's pranks with fire;
5. lightning;
6. sparks from tractors, steam engines, boilers;
7. malfunction of technological equipment;
8. arson;
9. electro- or gas-welding operations;
10. violation of safety rules for kerosene-powered equipment;
11. other; and
12. not established causes.

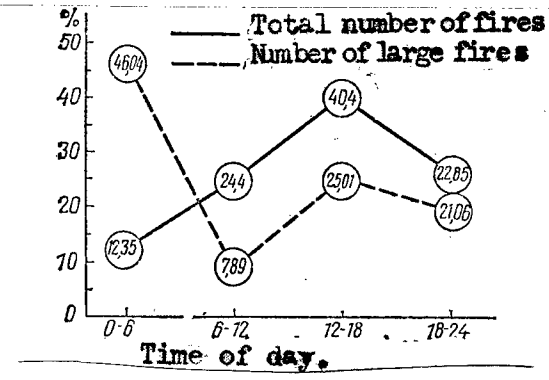


Figure 2. Diagram showing the number of fires by time of day

USSR UDC 637.12.05

STATE STANDARDS AND THE QUALITY OF MILK

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 65-71

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[Abstract] Soviet milk production increased by 9 million tons, or 17.4%, during the Ninth Five-Year Plan over the 1970 level, and during 1975 the increase amounted to 23.2%. Some improvement in quality accompanied this increase in output, and both are attributed, to a considerable degree, to the observance of state standards (GOST). Nevertheless, milk quality has not kept pace with the other indexes of the industry, and serious criticism has to be leveled against dairy farms of many of the republics and oblasts of the USSR. In 1975, for example, milk-processing plants had to turn back 65,000 tons of milk as unfit; the producing farms, in this case, were in the RSFSR (45,000 tons), the Ukrainian SSR (7,500 tons), the Belorussian SSR (2,700 tons), the Kazakh SSR (4,300 tons), and some other areas. Almost all farms in the Dzhambul district near Alma-Ata are producing low-grade milk, to mention one case, and the Alma-Ata region on the whole sets a bad example to the industry; but similar complaints must be made against the farms of many European USSR districts (Kuybyshev, Saratov, Penza, Ryazan', Lipetsk, Kaliningrad and others). Complaints concern mechanical and bacterial contamination, underuse of refrigeration and other facilities, and the inadequate maintenance of chemical standards (high acid content, ect.). The causes of these difficulties are entirely organizational and procedural, since dairy farms are adequately equipped and staffed. The solution consists in strict observance of state standards.

USSR UDC 636.087.2

EFFECTIVENESS OF THE USE OF GRAPE POMACE TO FATTEN YOUNG CATTLE

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 47-48

MAMEDOV, R. S., candidate of agricultural sciences, Azerbaydzhan Scientific-Research Institute of Animal Husbandry

[Abstract] In connection with increased grape production in the Azerbaydzhan SSR, local farms have begun the use of grape pomace in cattle feeding. The nutritive value of 1 kg of dry pomace is equivalent to 0.3-0.4 fodder units;

its effective use (for the Azerbaydzhan SSR) represents a saving of around 30- to 35,000 tons of grain. Experiments were run with three 10-head groups of 160-kg steers in the 15-month age group, using specific formulas for combined fodders enriched with trace elements and vitamins (the so-called premixes). The formulas included the following: coarse-ground grain, grape pomace, cotton seed meal, fine-ground straw, salt and calcium carbonate. The premixes were compounded as follows: premix 1 - cobalt chloride, 6%; zinc sulfate, 40%; copper sulfate, 33.7%; potassium iodide, 6.5%; vitamin A concentrate, 10%; vitamin D_3, 60 ml; premix 2 - to these same components the addition of 15 g of biomycin per ton of combined fodder, to prevent stomach illnesses. The use of grape pomace in steer-fattening feed, when combined with premixes as indicated, produced a moderate weight increase. Tabulated data for two test groups and a control group over a 3-month period accompany the article. Table 1.

USSR UDC 636.22/.28.084.522

FATTENING OF YOUNG CATTLE WITH THE USE OF PREMIXES

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 46-47

DENISOV, M. I., professor, KIRILOV, M. P., candidate of biological sciences, SABIROV, A. KH., graduate student in animal husbandry, NOVIKOV, P. N., Chairman of the imeni Lenin Kolkhoz, Serebryano-Prudskiy Rayon, Moscow Oblast, and KUDRYAVTSEV, A. V., Zootechnician

[Abstract] One means of introducing biologically active substances -- primarily vitamins and trace elements -- into the diet of animals, is to enrich their feed with combined fodders, or to prepare the enriching mixtures known as premixes. The authors worked out four formulas for premixes to be used in feeding steers, assuming that steer rations ought to be enriched with vitamins A and D and also trace elements. Since the value of adding vitamin E is still the subject of discussion, this vitamin was withheld from two of the formulas, and included in the other two. The trace elements were iron, manganese, copper, zinc, cobalt and iodine. Six groups of nine head each were organized (1 control group), all being fed similar rations of silage, straw and combined fodder, the latter consisting of 30% barley, 3% corn, 44% wheat, 10% grain mix, 10% cotton seed meal, 2% calcium carbonate and 1% salt. Variation in the diet was a matter of the content and quantity of the premixes. All animals were weighed individually on a monthly basis. It was found that the use of premixes in fattening steers offers a weight increase of 1.2-16.7%, and a feed cost decrease of 1.9-14.8%. Nevertheless, weight increase (over the control group) was realized only with use of formulas including vitamin E, which the authors strongly recommend, along with vitamin D, in the form of their premix No 2 (dose of 0.3%). Complete tabular data representing the results are given.

USSR UDC 636.22/.28.087.74

THE EFFECT OF METHIONINE ADDITIVES ON THE BREEDING CAPACITY OF COWS

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 62-64

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[Abstract] Methionine, one of the essential amino acids, is nearly always deficient in cow feed, especially of the silage type. Various published data indicate the need for studying SH-group activity in connection with the prevention of sterility in cattle. The authors determined reduction in the content of free SH-groups in the blood serum, as follows: with persistent corpora lutea, 3.3%; with hypertrophy of the ovary, 13.3%; and with oophoritic cyst, 46.7% (all in comparison with a normal puerperal period). The test animals were fed 50 g of prepared methionine granules twice weekly, and blood samples were taken three times weekly from both test and control groups. Results showed clearly that feeding of methionine on this schedule during the puerperal period prevented prolonged infertility in cows. The most important role of SH-groups appears to be their triggering of enzymochemical reactions which form the basis of the transmission of neural excitation, and of tissue growth and cell division; hence the authors studied also the action of the cholinesterases, which are enzymes participating in such transmission. It was shown that following calving the activity of acetylcholinesterase of the blood steadily mounts, and at a definitely higher rate in methionine-treated cows than in others. The feeding of methionine, according to the results of this study, (1) tends to normalize the reproductive function and to reduce the service period by 32.3 days, on the average, and (2) raises the blood level of total SH-groups by 7.83 mg%, the activity of acetylcholinesterase by 14.03 μM, and reduces the level of ketone bodies by 3.25 mg%.

USSR UDC 636.22/.28.034:658.32

A PROGRESSIVE SYSTEM FOR THE ORGANIZATION AND PAYMENT OF WORKERS AT DAIRY COMPLEXES

Moscow ZHIVOTNOVODSTVO in Russian No 12, Dec 76 pp 75-80

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[Abstract] Perfection of the organization and payment of workers employed at cattle farms (complexes) is one important means of raising efficiency and

improving the quality of operations. The transition from individual (small-group) care of cattle, which has been predominant on typical farms, to the servicing of large groups of animals on farm-complexes, has called for maximum specialization in the work of animal workers, in the direction of performing a limited number of operations. A new objective in the organization and payment of labor was set up in 1974, and is gradually being approached. Essentially, the earlier (and still existing) system was weak in two particulars: first, the individual worker was conceived of as a sort of personification of a job description, in very perfunctory terms, with very little consideration of specific local conditions of work, his own personal capabilities, or--most important--the monetary incentive; and, second, the organization of cattle farm labor has been essentially individual in character, as a result of which employees have tended to respond and work in isolated, uncoordinated fashion. Corrective measures involved in the new system call for the maximum practicable introduction of the team basis of organization, with utmost flexibility in wage adjustment and allowance for personal adaptability and technological advances -- in other words, a combination of specialized group effort and an appeal to the individual's personal ambition. Table 1.

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ORGANIZATIONAL FORMS AND ECONOMIC EFFECTIVENESS OF THE AGROINDUSTRIAL INTEGRATION OF ANIMAL HUSBANDRY

Moscow ZHIVOTNOVODSTVO in Russian No 12 Dec 76 pp 80-84

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[Abstract] Scientific-technical progress, advancing specialization, and increasing concentration of agricultural production are all hastening the integration of animal husbandry with industry. All branches of this area of agriculture are being drawn into the process; however, the production and processing of poultry have advanced most prominently in the integration process, and may serve as an example. More than 37% of the total volume of poultry consumed in the country is supplied by Ptitseprom SSR; agrarian-industrial forms of organization are "enterprises" and "associations." The enterprises consist of the so-called chicken factories, which embrace all the technological operations: breeding, incubation of eggs, maturing and processing of birds, realization of the finished product. Typically, the enterprise produces all the agricultural material necessary for raising chickens, rears and prepares the birds, and supplies them directly to the market, with little or no assistance from outside organizations.

It is a highly mechanized and automated operation, employing specialized worker groups. Corresponding remarks apply to the dairying and sheep-raising areas of agriculture. The essential feature of the new enterprise is the concentration of agricultural production (feed), the care and breeding of stock, the industrial processing of meat, eggs and other products, and the direct delivery of finished products to the market, at a single location (farm).

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COMBINATION FEEDING OF COWS WITH ACCOUNTING FOR THE UTILIZATION OF AMINO ACIDS IN THE FEED

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 72-76

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[Abstract] One serious practical problem of feeding of cows is a study of the ration required for high productivity. The characteristics of nutrition of the cows must be considered using a number of indicators, including amino acid content. Using the amino acid composition of the feed and the known needs of the animals, it is possible to calculate theoretically the most expedient combination of feeds. A study was made of the consumption, utilization and standardization of 16 essential and nonessential amino acids, with accounting for productivity and individual peculiarities of the animals throughout the period of lactation. The studies indicates that each amino acid individually in the process of nutrition and digestion remains an independent nutritional element, with its own digestibility factor and balance in the body of the cow. The results produced can be used to balance amino acid nutrition of cows. Tables 4; References 9 (Russian).

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EFFECTIVE METHODS OF UTILIZATION OF CARBAMIDE

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 76-82

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[Abstract] New and progressive methods have been developed for the utilization of carbamide. Effective methods of its utilization in cattle feed have been studied. Experience has shown that it is effective to introduce it in the composition of combined granules consisting of hay, feed concentrates, and mineral substances 1-2% by weight. The use of carbamide as granules including macro- and microelements supplying the demands of the animals and supporting the activity of internal microflora is quite effective. Carbamide can also be added to high-protein feed additives. Another effective method is the introduction of carbamide to the corn mass used in silage. This decreases the possible toxicity of the carbamide and allows mechanization of all operations. Carbamide can also be introduced to the soil for growing of the corn, each kg of carbamide used as fertilizer resulting in a gain of 1.4-2.18 kg of digestible protein in the grain. Tables 2.

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PRODUCTIVITY OF LANDRACE SWINE AS A FUNCTION OF PURE-BRED AND COMMERCIAL CROSSING

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 82-90

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[Abstract] Selection of animals both within breeds and for use in various methods of crossbreeding, utilizing universal type animals with animals of specialized high-yield breeds, is very important for breed quality maintenance, due to the great individual variability of yield and its highly hereditary nature. The commerical and productive properties of Landrace swine were increased in a breeding experiment with great white swine. The resulting swine were highly productive under the conditions of the southern Ukraine, indicating effective acclimatization. Good results in commercial breeding were produced with great white sows. The use of great white swine for crossbreeding with Landrace swine is recommended for the southern Ukraine. Tables 5; References 5 (Russian).

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THE NORTHERN KAZAKH MERINOS, A NEW BREED OF SHEEP

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 1, Jan 77 pp 64-72

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[Abstract] Sheep breeders in Kazakhstan have achieved a great victory: the creation of a new breed of highly productive, fine-fleeced sheep producing both wool and mutton, known as the northern Kazakh Merinos. Development of this new breed has been the result of successful selective breeding by an entire generation of scientists and breeders. The new breed is distinguished by its good adaptation to severe climatic conditions, high productivity of wool and mutton. The total population of the new breed is now 3 million head. Photographs of the new sheep are presented. Figures 4.

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MECHANIZATION OF A SYSTEM FOR DESIGNING TECHNOLOGICAL PROCESSES

Moscow MEDITSINSKAYA TEKHNIKA in Russian No 1, Jan/Feb 77 signed to press 4 Mar 76 pp 46-50

PASHCHENKO, V. S., and SHAPIRO, A. M., Special Construction-Engineering Bureau of Medical Technology, Kiev

[Abstract] The acceleration in the rate of scientific and technical progress, and the rise in the technical level of quality of medical articles requires introduction of essential engineering advances in industrial manufacture of these products. An effective means of radical restructuring the medical technological enterprises is to introduce the complex of State Unit System Standard, TPP(YESTPP). The basic goal of these standards is to provide, in a minimum period of time and with minimum labor expenditure, complete readiness to produce any type-for-issue articles for a given quality. An important element of this complex is design planning. The authors' bureau has worked out a mechanized system of designing technological processes for mechanized cutting and stamping. In working out the system the following basic tasks have been set forth: i) increase productivity of labor of the engineer-technologist by decreasing the unproductive portion of his labor; ii) increase quality of technical processes by order ranking the textural portion of the technological processes; iii) decrease time of preparation of articles of new medical technology; iv) decrease to a minimum duplication of work; v) improve inter-specialist understanding; and vi) impart universality to the system. To fulfill these tasks, the bureau used typization of technological processes founded on classification of surface of the components of medical instruments and equipment. The classification involves the specific features of a component (e.g., an aperture, smooth surface, conjunction of parts). The mechanized system for design employs an electronic code device for data preparation on a punched tape of a BREST-IT, involving classifiers of standard operations, and transition to individual design features. A part of the classifier and a skeleton diagram of the system are presented. The system has been introduced at the "Tochmedpribor" (precision medical instruments) plant in Kharkov. The Kiev bureau is said to be directing introduction of the system in other instrument enterprises. Figures 3; References 2 (Russian).

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COURSE OF PEPTIC ULCERS IN FISHERMEN

Moscow SOVETSKAYA MEDITSINA in Russian No 2, Feb 77 signed to press 12 Mar 76 pp 143-147

KRAVCHENKO, L. F., and VOLODARSKAYA, G. F., Department of Hospital Therapy of the Vladivostok Medical Institute

[Abstract] The authors note that contradictory reports are seen in the literature concerning the role of one's occupation as a factor in the appearance and course of peptic ulcer; for example, at the Third International Congress of Gastroenterologists in Tokyo, the conclusion was drawn that occupation played no role in this disease. Kravchenko, and other Soviet authors (C. G. Ziberov, A. V. Lesnichiy, for miners; A. I. Mel'nikov, for railroad engineers; V. I. Tiunov, for Aeroflot air personnel) have found a relation of job, nutrition, living conditions, and bad weather, and ulcers. The authors have examined the problem of fisherman who are regularly subjected to heavy work, separation from family, cramped quarters, restricted movement, temperature variation, noise, vibration, monotonous food, few vegetables and fruits, and stored or desalinated water. A study made on 134 fishermen showed, in contrast to other occupations, a more severe course of ulcers, perforations, pyloric stenosis, and chronic intestinal problems. The specific ulcer course is attributed to the adverse occupational and climatic factors, late hospitalization, and insufficient therapy at the outset of the exacerbation. References 25: 23 Russian, 2 Polish.

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