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BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 64

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USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 64

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USSR UDC 633.289:632.938

RESISTANCE OF AEGILOPS TO LOOSE SMUT

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 5, Sep/Oct 76 signed to press 10 Oct 75 pp 706-710

KRIVCHENKO, V. I., YAMALEYEV, A. M., and MIGUSHOVA, E. F., All-Union Scientific Research Institute of Plant Growing imeni N. I. Vavilov, Leningrad

[Text-English language abstract supplied by authors] Species with D and C genomes are more sensitive to Ustilago tritici f. aestivi than to f. duri, but with genomes S (=B and G) and C^u the case is the contrary. The most resistant to loose smut are species of the sections Polyeides, Uniaristepyrum, Comopyrum as well as Ae. ventricosa, Ae. speltoides and Ae. sharonensis, the most susceptible are species in the section Vertebrata. Populations of Ae. longissima loose smut are immunochemically similar to f. duri, and Ae. tauschii smut populations to f. aestivi. This seems to reflect phylogenetic relationships of these plants. References 11: 9 Russian, 2 Western.

USSR UDC 633.11+632.11:577.3

BIOPHYSICAL METHODS FOR EVALUATION OF THERMORESISTANCE IN PLANTS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 5, Sep/Oct 76 signed to press 3 Mar 76 pp 764-769

KITLAYEV, B. N., All-Union Institute of Electrification of Agriculture, Moscow

[Abstract] Introduction of new plant sorts which are resistant to unfavorable conditions, and development of agrotechnological procedures to increase frost-, heat-, and dry-resistance of plants are hindered in the USSR by the lack of instrumental devices to measure these resistance properties. The author has developed several new biophysical methods and equipment for assaying thermoresistance, viz., "Biofizika-1 KIT-4," and "KIT-5L"; the first have been approved by the Scientific Technical Council of the Ministry of Agriculture, RSFSR. The instruments are designed to measure changes in electroconductivity, and depolarization current in grain samples as a function of the reaction of the grain to extreme temperature (e.g. winter frost). The author claims accuracy, high performance and simple handling for his devices and suggests that they may be used to assay grain immunity resistance to salt and other external factors. Figures 4; Table 1; References 7 (Russian).

USSR UDC 632.954:632.51

APPLICATION OF D-BANVEL FOR EXTIRPATION OF MOUNTAIN BLUET AND THE EFFECT OF THIS HERBICIDE ON MAIZE YIELD AND QUALITY

Moscow DOKLADY VSESOYUZNOY ORDENA LENINA AKADEMII SEL'SKOKHOZYAYSTVENNYKH NAUK imeni V. I. LENIN in Russian No 9, Sep 76 pp 14-16

KRUMZDOROV, A. M., candidate of agricultural sciences, Kuban Agricultural Institute

[Abstract] Mountain bluet (gorchak polzychii) is a weed ideally suited to dryness and salinity and competes with all cultivated plants. Herbicide action has facilitated its liquidation. The author has studied the subsequent action of 2-methoxy-3,6-dichlorobenzoic acid--which he terms dicamba--on corn, Krasnodarskaya 309, planted 11 mos after use of dicamba. The experiments were done on the Lenin kolkhoz, Petrovskiy Rayon, of Stavropol Kray. The greatest effect of the herbicide was obtained with autumn application; spring application is less effective. Yields improve and quality is not lowered. Tables 3; References 5 (Russian).

USSR UDC 632.4:633.11

REFINEMENT OF THE METHOD FOR RECORDING OF POWDERY MILDEW OF WHEAT

Alma-Ata IZVESTIYA AKADEMII NAUK KAZAKSKOY SSR in Russian No 5, Sep/Oct 76 pp 10-11

SHAYMARDANOV, I. M.

[Abstract] Field observations of development and spread of powdery mildew on wheat over a 4-year period (1970-73) on the Yershov Agricultural Experimental Station of the Scientific Research Institute of Agriculture of the Southeast, on the experimental facilities of the Vol'zhk Scientific Research Institute of Hydraulic Engineering and Reclamation, and on the Ural State Agricultural Experimental Station have made it possible to establish a scale for recording damage to wheat by the powdery mildew. The scale has been set up in composite form and can be used to record diseases with determination of destruction, efficacy of chemical preparations, and count of varieties for degree of damage of the plants by the mildew at various stages of vegetation. The scale is composed of a graduated classification from 0 to 4, (0 corresponds to no damage, 4 to very severe) degrees of damage, and description of damage. For example, classification 4 on the scale corresponds to very severe damage; there is serious development of the disease, mold covers 76-100% of the leaves, interstices of the stem and ear. Table 1; References 4 (Russian).

USSR UDC 633.11:631.811.98

EFFECT OF THE COMBINED APPLICATION OF SYNTHETIC GROWTH REGULATORS AND FERTILIZER ON NITROGEN METABOLISM AND THE MAGNITUDE AND QUALITY OF YIELD IN WHEAT

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 20-26

GRUZDEV, L. G., candidate of biological sciences; NENAYDENKO, G. N., candidate of agricultural sciences; SINYAGIN, YE. I., and POSMITNAYA, L. V.; Central Institute of Agrochemical Service to the Agricultural Economy, Ivanova Agricultural Institute.

[Abstract] The combined use of various chemical preparations has already proved highly effective in agriculture; here, the authors study the effect of the combined use of the herbicide 2.4-D, chlorocholine chloride (CCC), urea and certain trace elements, on the nitrogen metabolism and productivity of wheat. The wheat strain Mironovskaya 808 was studied at the "Zarya Kommunizma" kolkhoz in Vladimirskaya Oblast, and at certain training farms, during the period 1973-1975. Various combinations of herbicide and chlorocholine were applied and a number of factors measured: linear growth of the wheat plants; accumulation of dry mass and the formation of leaf surface in winter wheat; nitrogen content (percent of dry mass) in winter wheat; variation in content of several families of free amino acids during different stages of maturation; beating down, harvesting and quality of grain (1974); fractionation composition of proteins; the effect of combined use of herbicide and fertilizer on yield and the chemical composition of the grain; and yield and grain quality of winter wheat following treatment. The authors found that: 1) the application of chlorocholine chloride is most effective mixed with certain herbicides, urea and trace element sulfates; 2) beating down of winter wheat plants is considerably reduced by such joint application, and there is complete destruction of plant pests; also, the metabolism of nitrogenous compounds is improved, with consequent increase in yield; and 3) the proposed method affords a degree of control of the quality of the wheat grain, and also the selection and quality of the proteins present. Tables 8; references 10 (Russian).

USSR

UDC 633.11:581.144.2:51

AN ENGINEERING THEORY FOR THE MATHEMATICAL PREDICTION OF STANDING POWER IN WHEAT PLANTS

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 27-35

VANSHTOK, A. S., Altay Scientific-Research Institute of Farming and Plant Breeding

[Abstract] The beating down of wheat plants may be the result of insufficient mechanical strength in the stalks, or weakening of the bonds which exist between the root system and the soil, as a result of thinning of the soil during periods of flooding. Beating down is said to be of "radical" or "root" type if the stalk is without break or bend and if the inclination of the plant begins directly at the tillering node. "Stem-type" beating down involves breaks or bends in the two lower above-ground internodes. A mathematical scheme for predicting standing power is developed. This is based on the assumption that strongly moistened soil losses its bond with the roots of the plant, and that these, together with the weight of the plant, are deformed by external force factors (wind and rain), so that flexure develops around a "hinge" in the tillering node. A number of physical parameters of soil are considered (volumetric weight, angle of internal friction, etc., for clay, dry sand, black earth, and so forth), and these are represented in several formulas involving stalk height, stalk diameter, wheat strain, and the like. These formulas, supplemented by the accompanying tables, are advanced as a means of calculating standing power in particular practical situations. Figure 1; tables 4; references 5 (Russian).

USSR UDC 633.1:543.71

CALCULATION OF MOISTURE CONTENT IN GRAIN DURING THE HARVESTING PERIOD

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 64-65

KUBYSHEV, V. A., corresponding member of the All-Union Academy of Agricultural Sciences; MAKSIMCHUK, V. A., candidate of technical sciences; and SABASHKIN, V. A.; Siberian Scientific-Research Institute of Agricultural Mechanization and Electrification

[Abstract] The moisture content of grain is a significant factor affecting the efficiency and quality of harvesting with combines, and also of other machinery used in cleaning and drying grain; it is the basic factor considered in choosing methods of processing and temporary storage. Conventional methods of determining moisture content are unfortunately combersome as well as inefficient. A formula is developed to calculate moisture content for any meteorological situation encountered during the harvesting period:

$$W = 17.4\, e^{-0.017d} + 23.5\, e^{-(1.69/H)} - 0.045 \sum_{i=1}^{r} d_i.$$

Here the first term characterizes daily moisture variation during steady weather, the second during periods of rain, and the third during shift from rain to calm weather. The symbol d denotes daily moisture deficit; H the amount of precipitation. A nomogram is supplied to facilitate calculation. Figures 2; no references.

USSR

USSR 632.452(571)

GENETIC-POPULATION CHARACTERISTICS OF THE BROWN BLIGHT IN THE TRANSURALS AND WESTERN SIBERIA

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 83-86

REYTER, B. G. and MESHKOVA, L. V.; Siberian Scientific-Research Agricultural Institute

[Abstract] Vavilov's dictum that the basic method for control of fungus diseases is the delineation of stable strains remains perfectly valid today; however, the difficulty of selection for resistance to phytopathenogenic fungi is complicated by the presence of physiological breeds of the parasite which differ physiologically from one ecological corner to another. Given here are the results of a study of the brown blight population in Omsk, Tyumen and Chelyabinsk oblasts, made with use of a standard set of strain differentiators and a Canadian series of isogenetic lines. The population consisted of 5-7 breeds, depending on the point of assembly of the infection, the main position being held by breed 77. All of the breeds consisted of finer taxonomic units or biotypes, differeing as to virulence. The results of the study point toward higher virulence of the Transural population. Tables 2; references 7 (Russian).

USSR

633.11:631.521

THE 'PRIOBSKAYA,' A PROMISING NEW STRAIN OF SPRING WHEAT

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 86-89

MAKSIMENKO, V. P. and CHEPIKOV, A. K., candidates of agricultural sciences; KHATSEVICH, N. V. and ROMANOVSKIY, G. YE.; Siberian Branch of the All-Union Institute of Plant Growing

[Abstract] Work on the new Priobskaya strain of spring wheat has been in progress for the second year at testing stations in Western Siberia. This new strain was developed by the Siberian Branch of the All-Union Institute of Plant Growing imeni N. I. Vavilov (formerly the Novosibirsk Agricultural Experiment Station) by crossing the Skala strain of spring wheat with the Novoukrainka 84 strain of winter wheat; the cross was made in 1961, the elite plant selected in 1966. Under specialized conditions (testing stations, small plots), the new strain exhibits some advantages over such standard strains as the Lutescens 758 and the Novosibirskaya 67. Bread produced from the Priobskaya has a much higher caloric content, for example; and the yield is

consistently higher (some 13.2 centners per hectare higher than the standard Skala strain). But these qualities do not carry through significantly to large plots. Probably the new strain should be used in alternation with corn and other plowed crops in the forested steppe zone. In particular, it appears to be well adapted to the conditions of Novosibirsk Oblast. Figure 1; tables 3.

USSR UDC 633.853.52

PROBLEMS OF INCREASING SOVIET SOYBEAN PRODUCTION

Novosibirsk SIBIRSKIY VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 5, Sep/Oct 76 pp 68-74

KUZIN, V. F., candidate of economic sciences, All-RSFSR Scientific-Research Soybean Institute

[Abstract] The increasingly critical problems of human and animal nutrition have focused the attention of Soviet agronomists and nutritionists on the soybean, possibly the most valuable of all agricultural crops (highest protein and fat content, high content of minerals and vitamins; low production cost; short vegetative period; source of valuable fodder, and good performance as a "mixer" crop in combination with corn). Nevertheless, Soviet soybean production lags behind that of other nations (productivity is roughly one-third that of the United States and Canada, and even falls behind that of China and Japan); and fails to achieve the potential which is readily possible under conditions of the USSR. Several general weaknesses in the soybean economy are noted: 1) plantings are largely (97%) limited to the Soviet Far East, whereas the European USSR and other areas offer favorable conditions for soybean cultivation; 2) present agronomic practices are inadequate in a number of respects (crop rotation, mechanization, etc.); and 3) administrative-planning efforts have not secured the desirable degree of introduction of the soybean in the agricultural economy, or adequately regulated seed distribution and other functions. The net result is an average yield of only 6-7 centners per hectare, as against a possible yield of up to 15-20 ct/ha, already realized on research plots and on some advanced farms.

Localization of Soviet soybean production in the Far East (Amurskaya Oblast alone supplies 70% of the national crop) is a matter of particular concern. Actually this region meets the natural requirements of the soybean fairly well: a frost-free period of from 100 to 150 days, with temperatures above 10°C; a neutral reaction in soil solutions; and 300-450 mm of precipitation (necessary for yields of 15-18 ct/ha). Nevertheless, there are serious weaknesses and dangers present. The bulk of precipitation in the Soviet Far East appears during the July-August period, producing over-moistening,

Droughts sometimes occur during the first half of the year (1968 and 1972 were seriously deficient in both heat and moisture), with serious damage to the soybean crop. Meanwhile, quite favorable conditions for soybean cultivation exist in other parts of the country: in the RSFSR (along the Volga, in the Northern Caucasus, Rostovskaya Oblast and Dagestanskaya ASSR) and also in the Ukraine, Uzbekistan, Kazakhstan, Georgia and Moldavia. But little has been done to promote cultivation in these areas; Moldavia, for instance, though it shows a relatively high yield of 8.9 ct/ha, accounts for only 0.3% of Soviet soybean acreage. Research data show that the irrigated lands of Kazakhstan and other parts of Central Asia, and also the southern part of the Central Black Earth Region and the Ukraine, offer good possibilities for soybean rotation with cotton and rice. Utilization of all these areas could raise Soviet soybean acreage to 1-2 million ha by the year 1980, and to 3-4 million ha by 2000.

Present agronomic practices seriously retard the country's soybean output. Here, weaknesses may be specified as follows: 1) underuse of mineral fertilizers: 2-3 ct/ha are normally applied instead of the optimal 7-10 ct/ha; 2) general failure to apply lime to acidic soils (70% of the soybean planted area shows some degree of acidity); 3) underuse of herbicides; 4) the complete lack of new agricultural machine designs which will meet the specific needs of soybean planting and harvesting; and 5) delay in the introduction of high-productivity and fast-ripening varieties of soybean. Soil liming is an extremely effective means of increasing productivity, as shown by the work of the Far Eastern Scientific-Research Institute of Agriculture and some other agencies; locally, liming has already increased the output of soybean and other crops by 2-3 ct/ha, which would correspond to an annual increase of 150,000 tons in the Far East alone. The proper use of herbicides (that is, region-adapted chemical preparations) would raise output by a similar 2/3 ct/ha. Total "chemization" (liming, scientific nutrition, proper use of mineral fertilizers and herbicides) would assure an increase of 5-6 ct/ha. On the mechanical side, farm equipment now being used in soybean cultivation is quite inadequate for the purpose. Seeders do not guarantee even distribution of the seed in rows, and often fracture as much as 2.5% of the seed; also, they plant at uneven depths, bring seed and mineral fertilizer into direct contact, and fail to pack down the rows. Harvesting machines, next in the production process, sometimes ruin as much as 15% of the mature crop, with more than 10% of beans being crushed; while subsequent processing on flow lines accounts for an additional 19% destruction of valuable beans through crushing and other damage.

On the positive side are the excellent results obtained by Soviet selectionists in developing new varieties of soybean adapted to every zone of the country potentially capable of soybean cultivation. Although these results have only partially been utilized, in 1975 more than 800,000 ha were planted in these regionalized (zone-adapted) varieties, which at that time numbered 35. Of these new varieties, the better ones offer an average yield of 12-18 ct/ha, and as much as 30 ct/ha if the crop is watered. Both the fodder and the "grain" uses of the soybean have been served by this research. Particular mention should be made of the work of V. A. ZOLOTNITSKIY, K. K. MALYSH, T. P. RYAZANTSEVAYA, A. K. LESHCHENKO, V. P. CHERNOGOLOVINYY, S. I. CHERNOBRIVENKO, V. A. GORDIYENKO, S. G. TEDORADZE, A. P. VASHCHENKO and YU. P. MYAKUSHKO.

It is concluded that the present (1971) Soviet soybean acreage of 867,800 hectares could be largely expanded through the use of lands in the European SSR and Central Asia, thus insuring against a crop failure in the Far East; that crop yield for the country as a whole could be doubled or trebled in a short time; and that administrative-planning measures (such as improved seed distribution) must be applied to secure correction of present weaknesses in the soybean economy. Table 1.

USSR

UDC 632.954:542.91:541.6

THE SYNTHESIS OF CERTAIN BENZAMIDES, AND A SEARCH FOR CORRELATION LINKS BETWEEN THEIR HERBICIDAL ACTIVITY AND CHEMICAL STRUCTURE

Moscow AGROKHIMIYA No 11, 1976 signed to press 2 Feb 76 pp 116-119

AYUPOVA, A. T., TSOY, Z. I., LOY, N. P., AFLYATUNOVA, R. G., ALIYEV, N. A., UMAROV, A. A. and KADYROV, CH. SH.; Institute of the Chemistry of Vegetable Substances. Academy of Sciences Uzbek SSR, Tashkent

[Abstract] One of the serious difficulties in the search for new organic pesticides consists in setting up principles for the synthesis of preparations with the desired properties. In general, the most promising approach is that based on the establishment of quantitative relationships derived from physicochemical data.

The authors set up regression equations reflecting various physicochemical parameters, applied these to a set of 17 substituted benzamides in order to predict their herbicidal action, then compared results with experimental data. Theoretical and empirical (laboratory) results were in fairly close agreement. Tables 2; references 7: 3 Russian, 4 Western.

USSR UDC 632.954:631.417

THE DYNAMICS OF CERTAIN PROPERTIES OF SODDY-PODZOLIC SOIL IN CONNECTION WITH THE USE OF SIMAZINE AND PROMETRINE

Moscow AGROKHIMIYA No 11, 1976 signed to press 25 Feb 76 pp 108-115

OVCHINNIKOVA, M. F., Agrobiological Station of Moscow State University, Moscow Oblast

[Abstract] The effects of herbicides on microorganisms and fungi, and on ammonia fixation and other soil processes, have been seriously studied by a number of investigators, but usually in connection with the period immediately following application of herbicides. In addition, available data are rather inconclusive, in some instances indicating an overall negative effect, in others, restoral of soil processes, or even an improvement. The present study, conducted on corn and sunflower plantings in 1974, was intended in part to clarify the time pattern followed by herbicide-induced effects on microflora and soil processes. Single applications of prometrine to sunflower plantings, and of simazine to corn plantings over a three-year period, had almost no effect on the seasonal progress of biological processes in the soil. The only difference between control and test plantings was that the intensity of some individual processes was slightly diminished. In July and August some reduction of soil respiration was observed, but at the end of the vegetative period (September), the intensity of respiration in control and test plants was almost identical. In addition, organic carbon content in some variants of the test was reduced by 0.13-0.32% in the May-August period, but there was virtually no change during the August-September period. It is concluded that the herbicides used in the study have no serious or lasting effect on soil microorganisms or processes.

USSR UDC 621.039.8

ACCUMULATION OF STRONTIUM-90 AND CESIUM-137 IN CROPS ACCLIMATIZED TO THE UZBEK SSR

Moscow AGROKHIMIYA No 11, 1976 signed to press 4 Feb 76 pp 101-107

DERGUNOV, I. D. and DANIL'CHENKO, A. V., Central Asian Institute of Phytopathology, Tashkent Oblast

[Abstract] Since the transfer of radioactive strontium and cesium from the soil to growing plants depends upon the biological character of the vegetation, a study was undertaken during 1972-1973 of various grain, technical, vegetable and cucurbitaceous crops of the Uzbek SSR in this connection, in view of the increasing agricultural importance of the region. Data supported the following conclusions: 1) Accumulation of Sr^{90} and Cs^{137} in crops depends largely on the biological specifics of the species or strain. Grain crops (corn, rice) accumulate those isotopes to a lesser degree than do technical, vegetable or cucurbitaceous (melons, etc.) crops; 2) In the commercially valuable portions of technical crops, more Sr^{90} was found in ambary, less in sesame and cotton. The largest amount of Cs^{137} was found in cotton, somewhat less in ambary and sesame; 3) Vegetable crops, as regards accumulation of Sr^{90}, rank as follows, in descending order: cabbage, onion, beet, carrot, tomato, potato; watermelon, melon; as regards accumulation of Cs^{137}, in same order, cabbage, carrot, tomato, beet, onion, potato; 4) Both Sr^{90} and Cs^{137}, in passing from soil to plant, are concentrated basically in the leaves and stalks, and to a lesser extent in the usable portions of the plant (grains, fruit, tubers); 5) Sr^{90} is the principal factor in soil-to-plant radioactive contamination, its plant content exceeding by tens or hundreds of times that of Cs^{137}; and 6) In the soil-to-plant transfer of Sr^{90}, there is discrimination with respect to calcium in the great majority of cases, and this phenomenon is particularly marked in the case of Cs^{137}. The Cs^{137}-calcium ratio for the soil is hundreds of times greater than that for plants. Tables 4; references 7 (Russian).

USSR UDC 631.816:633.11:631.445.4

FERTILIZING OF WINTER WHEAT ON IRRIGATED CARBONACEOUS CHERNOZEM OF THE KUBAN' REGION

Moscow AGROKHIMIYA No 11, 1976 signed to press 23 Feb 76 pp 47-50

GOLUBTSOV, A. M., Kuban' Agricultural Institute, Krasnodar

[Abstract] The Kuban' region is exceptionally favorable for the cultivation of a number of crops, but irrigation is necessary on account of insufficient rainfall during the period of intensive growth and development. In this situation, the application of fertilizer becomes particularly important in securing high yields. Long-term field studies were made by the Kuban' Agricultural Institute during 1973-1975, at the "Leninskiy Put'" kolkhoz in Novopokrovskiy Rayon, to determine the most effective fertilizing techniques for the given local conditions. It was found that mineral fertilizers applied to irrigated carbonaceous chernozem soils produced high grain yields (42.6-44.5 centners per hectare), independently of the nature of the predecessors, while the method of application (single or split type) played no part in the effectiveness of the treatment. Increasing the amount of mineral fertilizer applied from 6 up to 8 centners per hectares secured an increase in yield of 1.3-3.8 centners per hectare, or 3-9%. The highest content of crude protein (12.2 and 12.5%) and crude gluten (27.5%), however, was obtained in unfertilized wheat planted in alternation with silage corn and sugar beet; the lowest, in unfertilized wheat planted in alternation with sunflower (12.1 and 17.1%).

Depending on the predecessors, mineral fertilizers increased grain protein content by 0.5-1.2%, and gluten content by 0.4-1.8%. With increase in fertilizer dosage, the quality indices of the product were improved. With a background of fertilizer, the best quality in wheat was obtained following sugar beet, the worst following sunflower. Tables 2; no references.

USSR

UDC 631.811:633.11:(477.51)

THE EFFECT OF DOSAGE AND OF VARIOUS COMBINATIONS OF FERTILIZERS ON THE YIELD AND QUALITY OF WINTER WHEAT UNDER THE CONDITIONS OF THE POLESSIE [ALLUVIAL PLAIN] OF CHERNIGOVSKAYA OBLAST

Moscow AGROKHIMIYA No 11, 1976 signed to press 2 Feb 76 pp 40-47

RYBAK, V. K., Chernigovsk Agricultural Experiment Station, Kozeletskiy Rayon

[Abstract] Up to now only a few experiments, planned on the factorial principle and giving results adaptable to computer processing, have been carried out on the effect of dosage and fertilizer combination on a winter wheat crop. The Mironovskaya 808 strain was studied in short-term tests during the period 1972-1974 at the Chernigovsk Agricultural Experiment Station. An average of 8 tons of organic and 10 centners of mineral fertilizer were applied. The soil was of medium-podzolized, dusty-loamy type. Results were as follows: 1) The various forms of mineral fertilizer used exert a varied and by no means unidirectional effect on the growth and development of winter wheat and on the formation of the crop. To obtain high yields of good quality under the conditions of Chernigovskaya Oblast (that is, 40-45 centners per hectare), it is necessary to apply a complete mineral fertilizer, depending on the conditions of cultivation, in doses of N60-120P60-150K60-150 (in the fall, N30P60-150K60-150), and in the spring 1-2 mineral supplements of 30-45 kg/ha of nitrogen; and, 2) Mineral fertilizers improve the quality of winter wheat grain, increasing protein content by 1.5-2.5%, crude gluten by 6-9.7%; they also improve the technological properties of the flour, increasing its caloric value by 82-153 j, and the volume of bread (from 100 g of flour) by 35-101 ml. Tables 6; references 5 (Russian).

USSR

UDC 633.11:581.43:631.521

THE ROOT SYSTEM OF WHEAT AND POSSIBILITIES FOR IMPROVING IT BY SELECTION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 11(242), Nov 76 pp 43-48

ZYKIN V. A., candidate of agricultural sciences, Siberian "Order of the Red Banner of Labor" Scientific Research Institute of Agriculture

[Russian abstract provided by the source]

[Text] The article presents the results of a study of the root system of spring wheat developed by the All-Union Institute of Plant Growing as well as hybrid material with respect to the following characteristics: rootlet system development, quantity of large roots, relative growth of roots and leaves, and also the degree of hybrid vigor and dominance, hereditivity, depth of tillering nodule establishment, length of the epicotyl, number of primary and secondary roots, etc. Interspecies and intraspecies differences are established in root system characteristics, a positive correlation is found between the number of secondary roots and the weight of 1000 grains, the weight of the ear on the main stem and the weight of the plant, the straw and so forth. The degree of dominance and hybrid vigor is noted in the number of secondary roots; least indicative of these characteristics is the number of primary roots in the case of high hereditivity of the latter. It is hypothesized that the primary root system could be effectively improved by methods of selection. Tables 6; references 34: 29 Russian, 5 Western.

USSR UDC 633.14:631.527

EFFECT OF SHORT-STEM DOMINANCE ON QUANTITATIVE CHARACTERISTICS OF RYE

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 11(242), Nov 76 pp 48-54

KOBYLYANSKIY, V. D., candidate of biological sciences, All-Union "Order of Lenin" and "Order of the Friendship of Nations" Scientific Research Institute of Plant Growing imeni N. I. Vavilov

[Russian abstract provided by the source]

[Text] The article presents materials from an investigation of a genetically new monofactor index of dwarfism in rye controlled by a dominant gene. As a result of a study of isogenetic populations of long-stem and short-stem plants it is found that the short-stem characteristic has a positive effect on elements of plant productivity: number of stems per plant, leaf size, number of ears and the grains per ear. No changes are observed in such characteristics as the number of straw nodes, straw diameter, wall thickness, wall strength, and the content of protein and lysine in the grain. The height of plants under the influence of the dominant short-stem gene is shortened by 40%. Figure 1; tables 2; references 17: 12 Russian, 5 Western.

USSR UDC: 631.85

ON THE USE OF PHOSPHORUS-CONTAINING FERTILIZERS THAT ARE INSOLUBLE IN WATER

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 11(242), Nov 76 pp 22-26

VOL'FKOVICH, S. I., academician, Moscow "Order of Lenin" and "Order of the Red Banner of Labor" State University imeni M. V. Lomonosov

[Abstract] An examination is made of the outlook for using water-insoluble phosphorus fertilizers such as phosphorites, bone, metallurgical phosphate slag, defluorinated phosphates, thermophosphates, dehydrated phosphates of alkali metals and ammonium, etc. It is concluded that despite their limitations, such fertilizers have certain advantages: they contain no free acids, are either neutral or weakly alkaline in reaction, are not corrosive to paper, wooden or metal containers and can be mixed with most other fertilizers. Some of the natural phosphates contain necessary trace elements, they do not retrograde to the extent that acid phosphates do and retention in the soil is better. It is recommended that both water-soluble and water-insoluble fertilizers be used together for maximum effect. References 15 Russian.

USSR UDC: 633.511-632.954

HERBICIDES FOR CONTROLLING ANNUAL WEEDS DURING VEGETATION OF COTTON

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 11(242) Nov 76 pp 34-38

RUDAKOV, G. M., academician of the Lenin All-Union Academy of Agricultural Sciences, GABDURASHITOV, I. M., Central Asian "Order of the Red Banner of Labor" Scientific Research Institute for Mechanization and Electrification of Agriculture

[Russian abstract provided by the source]

[Text] The paper gives the results of many years of research on techniques for applying herbicides, in particular Kotoran, on cotton fields. The effectiveness of such treatment is determined as a function of the timing, doses and repetition of applying the chemical. It is found that the most effective treatment is single application of the herbicide immediately before the first vegetation irrigation against a weed-free background, which is achieved by applying the herbicide before planting in doses of 2.0-2.4 kg/ha of the active agent when water is used at a rate of 400 l/ha. This either eliminates hand weeding of annual varieties, or limits such work to one light weeding at the end of vegetation.

USSR UDC 577.155.3:547.458

IMMOBILIZATION OF THE ENZYME L-ASPARAGINASE OF E. COLI ON POLYSACCHARIDES. I. COVALENT BONDING WITH INSOLUBLE CEPHAROSES AND KM-CELLULOSE

Tashkent KHIMIYA PRIRODNYKH SOYEDINENIY in Russian No 5, 1976 signed to press 12 May 75 pp 639-643

KARSAKEVICH, A. S., ZHAGAT, R. A. and SON, V. YU., Institute of Organic Synthesis, Academy of Sciences Latvian SSR, Riga

[Russian abstract provided by the source]

[Text] Immobilized L-asparaginase is synthesized by methods of covalent combination with insoluble cepharoses 4B and derivatives of the enzyme with KM-cellulose. An investigation is made of some kinetic properties of the resultant compounds, their stability and the way that activity depends on the pH of the medium. It is found that immobilized L-asparaginase has high resistance to heat, is stable in storage and is more resistant to competing inhibitors than the natural enzyme. Figures 3; tables 2; references 11: 5 Russian, 6 Western.

USSR UDC 582.282.23.095:577.154

ACTIVITY OF ENZYMES OF THE CITRATE, GLYOXYLATE AND PENTOSE PHOSPHATE CYCLES DURING GROWTH OF YEASTS ON HEXADECANE AND GLUCOSE

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 1 Jan/Feb 76 signed to press 11 May 75 pp 33-40

LOZINOV, A. B., GLAZUNOVA, L. M., and YERMAKOVA, I. T., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

(Text-English language abstract supplied by authors) The activity of key enzymes of the citrate (CC), glyoxylate (GC), and pentose phosphate cycles (PPC) was determined in the cells of Candida lipolytica and Candida tropicalis growing on hexadecane and glucose. The activity of isocitrate lyase and malate synthase (enzymes of GC) was very high in hexadecane grown cells but was almost absent in "glucose" grown. The activity of citrate synthase and aconitase was 2-4 times and 1.5-2 times, respectively, higher in the cells grown on n-alkane. The activity of citrate synthase of "hexadecane" and "glucose" yeasts was higher than the activity of other enzymes of CC (aconitase and isocitrate dehydrogenase), especially in the "hexadecane"

cells. The activity of the key enzymes of PPC was almost the same in the yeast cells, grown on "hexadecane" and "glucose". Possible factors causing differences in the enzymes of GC and CC are discussed. Yeast organisms incapable of growth on n-alkanes were found to be able to grow on acetate (43 strains belonging to 35 yeast species have been studied) and to have a high activity of isocitrate lyase. Therefore, the absence of growth of many yeast strains on n-alkanes is not caused by the absence of the activity of enzymes of GC in these strains. Figures 2; Tables 3; References 22: 4 Russian, 18 Western.

USSR UDC 613.281:664.951.037.5

HYGIENIC ASSESSMENT OF FISH FROZEN BY FREON-12 CONTACT

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 15 Dec 75 pp 111-114

KONEVA, V. V., and ARTAMONOVA, V. YE., candidate of medical sciences, Department of Nutritional Hygiene, Leningrad Sanitary-Hygiene Medical Institute

[Abstract] An 800x250x60 mm 10-11 kg block of fish is placed in liquid freon-12 in a refrigerated container. The fish are thus rapidly frozen in about 40 minutes; the block center is at -18°. The fish were subjected to organoleptic tests in 3 states (frozen, defrosted, and boiled), determination of residue, fat content, acid and peroxide numbers. The freezing method did not affect the fish tissue. Labile fluorine was not found in the defrosted and boiled fish, nor in the bouillon. No essential difference in weight gain of rats fed on the freon frozen fish was seen from the usual freezing in air technique. Rats fed on fatty fish did gain less weight, possibly due to change in the fat. Enzyme systems were unaffected, but glutamine-pyruvic transaminase activity was lowered in rats eating the fatty fish. Table 1; References 6 (Russian).

USSR UDC 576.852.2

NOCARDOMYCOLIC ACIDS IN THE CELLS OF MYCOBACTERIUM RHODOCHROUS NCTC 576

Moscow BIOLOGICHESKIYE NAUKI No 11, 1976 signed to press 26 Apr 76 pp 106-108

KASUMOVA, S. A., ROZYNOV, B. V., KORONELLI, T. V., KVASNIKOV, YE. I. and NESTERENKO, O. A., Institute of Microbiology and Virology, Academy of Sciences UkrSSR

[Abstract] The authors separated nocardomycolic acids from the saprophytic strain Mycobacterium rhodochrous NCTC 576; these had carbon atoms varying in number from 38 to 47, but with predominance of 40, 42 and 44. They were both saturated, and with a single double bond in the main carbon chain. The acids on the chromatogram showed up similar to the lipid LCN-A, isolated from the same culture. Earlier research by D. E. Minnikin, et al, indicated the identity of nocardomycolic acids and the lipids LCN-A Nocardia caviae NCTC 1934 and N. calcarea NCIB 8863. References 31: 2 Russian, 11 Western.

CSSR UDC 617.58:616.13-004.6-007.271:612.16-087

PULSE WAVE ANALYSIS USING THE SYSTEM OF DISCRETE ORTHONORMAL EXPONENTIALS IN OBLITERATING ARTERIOSCLEROSIS

Prague CASOPIS LEKARU CESKYCH in Czech Vol 115 No 46 1976 pp 1428-1432

OLIVA, I., GUTTENBERGEROVA, K., and ROZTOCIL, K., Institute of Clinical and Experimental Medicine, Prague

[Text-English language abstract supplied by authors] Pulse wave analysis using the system of orthonormal exponentials was employed to detect early stages of arteriosclerosis in the lower extremity arteries. The pulse wave was recorded from the distal phalanx of the second digit of 78 lower extremities in 54 patients and in 19 extremities of healthy subjects by means of a transparent photoplethysmograph. The results obtained suggest the possibility of making a distinction between subjects with diffuse arteriosclerotic occlusions in a relatively high proportion of cases. The simplicity and low cost of the photoplethysmographical method offers some possibilities for using the non-invasive method for diagnostic purposes. Figures 5; Tables 2; References 9: 1 Czech, 1 German 7 English.

USSR UDC 615.471:616.831-073.916

MODERNIZATION OF THE GT-2 GAMMA-TOPOGRAPH

Moscow MEDITSINSKAYA TEKNIKA in Russian No 6 Nov/Dec 76 signed to press 17 Nov 75 pp 14-17

MIRGORODSKIY, O. A., BIBIK, V. N., and KOCHEGARENKO, YU. V., Scientific Research Institute of Neurosurgery, Ministry of Health Ukr SSR, Kiev

[Abstract] Gamma-topography in the neurosurgical clinic involves a comparatively large volume and complexity of examinations of patients with brain injury. Maximum decrease in time of examination is extremely important. The GT-2 instrument (for studies with I-131, Hg-203, and others) is the most widely used in the USSR. Use of Ts-99m permits speed-up of examination but such use requires improvement of the detecting block of the GT-2. The authors expanded the discrimination window in the analyzor block of the GT-2 by a factor of 1.5; matching the windows with the energy resolution of the unit, plus use of an improved high-power voltage source made it possible to broaden the energy range of the instrument on the low energy side, improve statistical evaluation of the topogram, and shorten the examination time. Figures 2; References 4 (Russian).

USSR UDC 615.472:616.12-089.28-77:621.3.035.2

IMPLANTED ELECTROCARDIOSTIMULATORS

Moscow MEDITSINSKAYA TEKNIKA in Russian No 6 Nov/Dec 76 signed to press 26 May 75 ;; 25-30

SHPANIN, M. G., and OVANESOV, R. A., Special Design Bureau of Gosplan (State Planning) Azerbaydzhan SSR, Baku

[Abstract] This is a review of the use of implanted cardiac pacemakers, with emphasis on the medical-technological aspects involved. The authors present a detailed description of the time features of the work of pacemakers and the rhythms of the individual types employed--asynchronous, R-suppressing, R-repeating and R-synchronizing. Soviet asynchronous models "EKS-4" and "EKS-8" are compared with the US "Cordis-167A" and "Arco-Nuclear K, LI-2", West German "Biotronik, IKR-51", and Italian "LEM, IP-103". Tabulations of comparisons of other models are given for the R-suppressing type (Soviet "EKS-5", US "Cordis-162C" and "Star Edwards-8114", West German "Biotronik-IKR-54" and "Siemens-EM 169"); for the R-repeating (Soviet "EKS-7", US "Cordis-163A", and West German "Biotronik-IKR-52"); and for the R-synchronizing (Soviet "EKS-6", US "Cordis-16YA", and West German "Biotronik-IKR-53"). Figures 2; Tables 4; References 15: 6 Russian, 9 Western.

USSR

UDC 616.831-031.84-073.432.19

USE OF FOCUSSED ULTRASOUND FOR LOCALIZED DESTRUCTION OF VARIOUS STRUCTURES OF THE BRAIN

Moscow NEVROPATOLOGIYA I PSIKHIATRIYA in Russian Vol 76 No 12 1976 signed to press 6 Apr 74 pp 1810-1816

VYKHODTSEVA, N. I., GAVRILOV, L. R., MERING, T. A., and YAMSHCHIKOVA, N. G., Institute of the Brain, Academy of Medical Sciences USSR; Acoustic Institute, Academy of Sciences USSR, Moscow

[Text-English language abstract supplied by authors] It was demonstrated that destruction of the brain can be accomplished by different combinations of ultrasound intensity and duration of irradiation. By experimental means cavitational thresholds of brain tissues were determined and a calculation was made of increased temperature in the zone of focus in each separate regime of irradiation. The authors describe the foci of lesions where the main mechanism of destruction was only warmth, either only cavitation, either warmth and cavitation together. Irradiation of deep brain structures was not accompanied by changes of the cortical and subcortical structures, located above the focus of necrosis along the path of the ultrasound ray (light microscopy). The probability of a target hit into the given brain structure corresponded to the preciseness allowed in a stereotaxic operation. Figures 3; References 18: 2 Russian, 16 Western.

USSR UDC 615.849.19:616-002

LOCAL AND GENERAL REACTIONS OF THE BODY UNDER THE INFLUENCE OF HELIUM-NEON LASER RADIATION

Alma-Ata IZVESTIYA AKADEMII NAUK KAZAKSKOY SSR in Russian No 5, Sep/Oct 76 pp 85-86

SHORTANBAYEV, A. A.

[Abstract] The author reviews the development, application, and effects of lasers, and reports his own experiments to identify the effect of a helium-neon gas laser (LG-75, 20 MV) on metabolic processes in muscle tissue of chinchilla rabbits. He measured oxidation-reduction potential, partial pressure of oxygen, and oxygen content in arriving and departing blood, indices of natural immunity (complement, lysozyme, hemagglutinins and hemolysines) which characterize bodily resistance. Results indicated that the laser increased penetrability of the vascular wall, increased to a slight degree the proliferative processes associated with the rise in oxidation-reduction potential. The latter dropped lower after 20 days than the initial level, and was accompanied by sclerosing of the vessels and some disappearance of proliferation. The irradiation increased bodily resistance. References cited in text refer to authors and dates of their work.

USSR UDC 614.443:576.895.711.095

CHANGES IN THE FAUNA AND INTENSITY OF MOSQUITO ATTACKS UNDER THE INFLUENCE OF DRAINAGE OF THE TERRITORY IN NOVGOROD OBLAST

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 45 No 5, Sep/Oct 76 signed to press 21 Apr 75 pp 568-573

FEDOROVA, V. G., Novgorod Oblast Sanepid Station

[Text-Russian language abstract supplied by author] Extensive hydroreclamation programs have been undertaken in the Novgorod Oblast area. The authors have examined the effect of drainage, in the vicinity of Lesnaya village, on p. Aedes mosquitoes in the open areas. They found a maximum decrease in mosquito population in the first year after complete execution of the drainage. The intensity of mosquito attacks also remained lower (by a factor of 1.8-2) in the following 2 years of observation. An impoverishment of p. Aedes fauna and their dominant species was noted. After the drainage, the dominant species of A. communis mosquito were not seen in collections over a 3 year period; or of A. cataphylla and A. diantaeus over a 2 year period. As a result of construction of the drainage system, small temporary water basins disappeared, and led to a change in the dominant species. The biting mosquitoes consisted basically of A. cantans, A. leucomelas, A. cinereus, which swam in the deeper, shaded, long-existing water basins (pits, ditches, and depressions around trees). As a consequence of the drainage, the number of attacking mosquitoes decreased from 13 to 6 species, but a seventh species appeared--A. leucomelas not previously seen in the collections. Figures 3; tables 2; references 3 (Russian).

USSR UDC 614.71(470.41-25)

EXPERIENCE IN THE IMPROVEMENT OF ATMOSPHERIC AIR IN KAZAN

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 17 Nov 75 pp 91-94

ZAYCHKOVSKAYA, S. M., and DAUMOV, F. F., City Sanepid Station, Kazan; Kazan Medical Institute imeni S. V. Kurashov

[Abstract] Experience in air purification is cited for one of the largest industrial cities of the Volga region, Kazan. In general the city is subject to 3 types of pollution: discharges from chemical and petrochemical enterprises, products of incomplete combustion of liquid and solid fuel in industrial and communal boilers, and exhaust gases of autotransport and dust. Information collected by extensive survey of the city's pollution problems led to publication, by the Council of Ministers of the Tatar ASSR, of the decrees "Measures for further improvement of the condition of the air in populated sites of the TASSR" and "Creation of sanitary-protective zones around industrial enterprises." Advice on necessary procedures was sought from institutes of labor hygiene and occupational diseases (Ufa and Gorkiy), and essential technological measures were implemented. These measures were generally successful. Where they were not, the enterprises lacked equipment or decisiveness. The authors point out that resolution of the problem requires concerted participation of engineers, design and planning personnel, economists, autotransport workers, auto inspectors and sanitary personnel. The program is still underway.

USSR UDC 614.71-074:543.08

ASPIRATOR FOR AIR SAMPLING UNDER FIELD CONDITIONS

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 20 Nov 75 pp 97-98

SOSNIN, A. A., Oblast Sanepid Station, Tselinograd

[Abstract] Air sampling in sanitary-hygiene practise employs a model 822 aspirator made by the Krasnogvardeyets plant; it is fed by 220V hence its use is limited, and not possible under field conditions. The author has designed an aspirator, which utilizes a ME-218 electric motor, and can be mounted on an automobile (e.g. "Volga", "Moskvich", or "UAZ". It is powered by the 12V electric system of the auto, or by its own battery. A photo of the device is shown. It has been successfully used under field conditions. Figures 2.

USSR UDC 614.7(478)

PROBLEMS OF ENVIRONMENTAL PROTECTION IN THE LIGHT OF RESOLUTIONS OF THE TWENTY-FIFTH CONGRESS OF THE CPSU AND THE FOURTEENTH CONGRESS OF THE COMMUNIST PARTY OF MOLDAVIA

Kishinev ZDRAVOOKHRANENIYE in Russian No 5, Sep/Oct 76 pp 3-6

VENU, V. N., Deputy Minister of Public Health, Moldavian SSR

[Abstract] A survey of the current state and outlook with regard to the environmental protection situation in the Soviet Union. Some of the specific legislation and guidelines drawn up in recent years are mentioned. The problems of development of the national economy of Moldavia are discussed with emphasis on agricultural production and the concomitant questions of preventing pollution of water, soil, vegetation and the atmosphere. Some figures on given on the introduction of sewage treatment plants, traffic regulation, food testing, steps to reduce industrial emissions of harmful substances into the atmosphere. The importance of planning in location of industrial complexes, urban planning, use of poisonous chemicals in agriculture and so forth is emphasized. More governmental supervision will be exercized in the future over all these areas. More study is needed on environmental impact problems.

USSR UDC 614.4+616.9-036.22-084):681.31

USE OF COMPUTER AND MATHEMATICAL METHODS IN EPIDEMIOLOGICAL WORK. REPORT V. ASSESSMENT OF INFECTIOUS MORBIDITY WITH THE AID OF STANDARDIZED INDICES

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 17 May 76 pp 20-24

LEONT'EVA, L. G., ROMANOVSKIY, G. V., and KRIVENKO, O. V., Institute of Biophysics, Moscow

[Text-English language abstract supplied by authors] The paper treats of the method of obtaining special and generalized indices on the computer M-222 to be used for the analysis of infectious morbidity under automatic control system conditions. Assessment of significance of the differences between the actual number of diseases and the "usual" morbidity level characteristic of the given territory and the time of the year lies at the basis of the calculation of the standardized indices. Complex evaluation of the epidemiological condition of the controlled districts was carried out according to the data of the official monthly and annual sanitary-epidemiological report forms No 85. Tables 2; References 2 (Russian).

USSR UDC 616.981.455-07(47)(091)

THE FIFTIETH ANNIVERSARY OF DISCOVERY OF TULAREMIA IN THE USSR

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 20 Mar 76 pp 79-84

OLSUF'YEV, N. G., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR

[Abstract] Tularemia was first diagnosed in 1926 in the area around Astrakhan by Suvorov, Vol'ferts, and Voronkova, physicians of the plague control organization. Disease cases (near Astrakhan) in 1877 may also have actually been tularemia. At present it is known in the 14 union republics (not in the Kirgiz SSR), with foci from the Baltic to the Pacific. Important Soviet investigators are listed; key institutions are the "Mikrob" Plague Control Institute, I. of Experimental Medicine, the Gamaleya I., the Central I. for Advanced Training of Physicians, Plague Control I. in Irkutsk, Stavropol, Rostov-on-Don, and that in Central Asia, the Tomsk Scientific Research I. of Vaccines and Sera, the Rostov I. of Epidemiology, Microbiology, and Hygiene, and the Omsk I. of Diseases of Natural Foci. The sanepid stations are also active. Study from the natural focus aspect has been the most important

Soviet contribution. Seventy four species of bloodsucking arthropods seem to be involved in the USSR. Reliable laboratory diagnosis has been perfected. Prophylaxis employs a highly-effective live vaccine. Maximum cases since 1950 were 271 in 1967; minimum, 22 in 1970. Future emphasis will be on the natural focal approach, study of pathogenesis and immunity, and diagnosis. No references.

USSR UDC 616.981.42+616.981.71+616.986.7)-036.21(211)

SEARCH FOR COMBINED FOCI OF BRUCELLOSIS, ENDEMIC RICKETTSIOSES, AND LEPTOSPIROSES IN THE TRANSPOLAR REGION

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 3 Feb 76 pp 141-142

GUDOSHNIK, A. N., SHAYMAN, M. S., and RAYKHLIN, M. I., Omsk Institute of Diseases of Natural Foci

[Abstract] The work was done (1972-1974) in the Taymyr National Okrug which reports widespread brucellosis, and infection of people, reindeer, and rodents with leptospirosis and endemic rickettsioses. In those years 3711 sera (1719 people, 1428 reindeer, 69 hutch foxes, and 495 rodents), bacteriological specimens from rodents, and 3000 mosquitoes were examined at 12 populated sites including Khatang and Dudinka. 1083 locals and 636 recent arrivals (93% of whom were in the area over a year) were the subjects. Simultaneous infection with two diseases was seen; most affected by two diseases were men and women in the ages 20-30 and 30-40. The reliably established coincidence of foci indicate the need to consider these findings in diagnosis of infectious disease of obscure etiology. No references.

USSR UDC 616.981.717-036.21(470.312)

EXISTENCE OF A NATURAL FOCUS OF NORTHERN ASIA TICK-BORNE RICKETTSIOSIS IN THE TULA OBLAST

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 22 Mar 76 pp 142-143

YABLONSKAYA, V. A., ZHMAYEVA, Z. M., PANFILOVA, S. S., and KOTELINA, A. F., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, and Tula Oblast Sanitary Epidemiological Station

[Abstract] The Tula Oblast is south of Moscow O., and west of Ryazan O. In 1950 Dermacentor pictus ticks in this oblast were found to harbor R. sibirica. The authors have confirmed the presence of Northern Asia tick encephalitis in the Lenin Rayon of Tula O.; this situation continues to exist. The findings indicate a high sensitivity of the hemocyte test as a rapid diagnostic procedure and the potential use of chicken embryos to identify rickettsia in naturally infested ticks. No references.

USSR

Moscow OKEAN-EKONOMICHESKIYE PROBLEMY OSVOYENIYA 1975, 199 f. (pp 80-81 are translated below)

BYUNICH, P. G., Editor

[Text] An experimental industrial marine farm has been established in the Far East in the Peter the Great Bay (Rayon Pos'yeta). Scientists of the Pacific Ocean Scientific Research Institute of Fisheries and Oceanography--TINRO--and the Institute of Marine Biology of the Far East Scientific Center, Academy of Sciences, USSR, and specialists at this farm have generally worked out the biotechnical procedures for growing and gathering young sea scallops. In 1972, for the first time in the nation's practise, an industrial transplanting was carried out of 50 thousand young scallops to the sea floor. Experience in raising scallops in Primoriya has indicated that under marine farm conditions, the survival rate is 65%, whereas, under natural conditions it is only 2-4%. Growing scallops in sea farms requires, according to preliminary estimates, less expenditure of labor and capital than handling them under natural conditions. Studies are under way on the biotechnology of artificial raising of trepang, oysters, and mussels.

In Valentin Bay (coast of the Primorskiy Kray) an experimental plantation has been established to raise sea cabbage (laminaria). Laminaria under artificial cultivation is distinguished by a high rate of growth, making it possible to collect a harvest every year, not once in two years as is the case under natural conditions. Expenditures for harvesting laminaria raised in a marine farm, in comparison with its harvesting under natural conditions, are significantly lower since the harvesting process for artificially-raised laminaria can be totally mechanized. In addition, artificial planting of laminaria will promote the settlement of invertebrates since laminaria is a natural substrate on which the larvae settle down and attach themselves.

The Scientific Technical Council of the Ministry of Fish Industry, USSR, discussed, in 1973, the establishment of marine farms and, also, reports of work of the experimental-industrial farm in Primoriya. The Council emphasized the great national economic importance of this work and recommended that the TINRO intensify work to improve methods for artificial raising of marine trepang, and sea cabbage. It turned its attention to the potential for research work on such things as oysters, mussels, and other molluscs.

Prospects are good for marine farm raising of marketable invertebrates and algae (shelf forms). These things lead a slightly mobile, or, by attaching themselves to the bottom, a motionless form of life so that their bioproductivity can be increased. In addition they grow rapidly and readily replace themselves.

Broad development of a network of marine farms will make it possible to increase the output of items which are very valuable as foodstuffs and to attain the necessary volume of output of fish and invertebrate products, independent of the effects of natural and international factors.

USSR UDC 576.851:577.472(285.2)

ANNUAL PRODUCTION OF BACTERIOPLANKTON IN PELAGIC WATERS OF SOUTHERN BAIKAL LAKE

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 1 Jan/Feb 76 signed to press 27 Sep 74 pp 161-165

MAKSIMOVA, E. A., Baykal Biological Station of the Scientific Research Institute of Biology at the Irkutsk State University

[Text-English language abstract supplied by author] The time of generation of bacterioplankton in the pelagic zone of Baykal differs in various seasons of the year: the minimum time is in December of 1970 (25 hours), the maximum time is in October of 1970 (580 hours) and in June of 1971 (560 hours). Monthly production of bacteria for a layer of 0 to 50 m varies from 0.07 g in January to 49 g of wet weight per 1 m^2 in September. Annual production of bacterioplankton in a layer of 0 to 50 m is 118.5 g of wet weight per 1 m^2 of the lake surface. The P/B coefficient of microorganisms varies from 0.02 in January to 1.1 in December. The most favorable conditions for bacterial growth therefore are in April, July-September, and December. The annual P/B is 4.42. Figure 1; Table 1; References 13 (Russian).

USSR UDC 577.472:577.486

SOVIET INVESTIGATIONS IN BIOLOGICAL PRODUCTIVITY OF MARINE PELAGIC COMMUNITIES

Vladivostok BIOLOGIYA MORYA in Russian No 6 1976 signed to press 3 Mar 76 pp 3-12

GRESE, V. N., and PETIPA, T. S., Institute of Biology of Southern Seas, Academy of Sciences Ukrainian SSR, Sevastopol 335000

[Text-English language abstract supplied by authors] The survey presents the main results of Soviet investigations made in connection with the International Biological Program. The studies were subdivided into three directions: 1) investigations of production and balance of energy and matter in populations of the most common pelagic species; 2) investigations of structure and production processes of different trophic levels; 3) studies of general regularities of functioning of the pelagic ecosystems as a whole and production and transformation of organic matter in these systems. Experimental and field data obtained in pelagic regions of the Azov Sea, Black Sea, in the Northern and Far-Eastern Seas, in the Atlantic and Pacific Oceans, are described. Figures 3; Table 1; References 34: 28 Russian, 6 Western.

USSR UDC 582.26:581.524.44:581.11

PHOTOSYNTHESIS AND ORGANOTROPHY IN SEAWEEDS AS A FUNCTION OF INDIVIDUAL WEIGHT OF THEIR THALLUSES

Vladivostok BIOLOGIYA MORYA in Russian No 6 1976 signed to press 10 Jan 75 pp 47-51

KHAYLOV, K. M., and FIRSOV, YU. K., Laboratory of Ecological Metabolism, Institute of Biology of the Southern Seas, Academy of Sciences Ukrainian, SSR, Sevastopol 335000

[Text-English language abstract supplied by authors] The dependence between individual weight of seaweeds and physiological processes--photosynthesis and organotrophy (uptake of dissolved organic matter) as well as dark fixation of CO_2 was investigated by radiocarbon method in five species of the Barents Sea macrophytes. Photosynthesis and organotrophy are inversely proportional to individual weight of seaweeds. This dependence was approximated by the equation of parabola. No connection between individual weight and dark fixation of CO_2 was observed. Some physiological reasons of the described phenomenon are discussed as well as its significance for the calculation of production in seaweed populations. Figures 4; Table 1; References 5 (Russian).

USSR UDC 639.21

USE OF THE HEATED DISCHARGE WATERS FROM THE KOLA ATOMIC POWER STATION FOR REARING MARKETABLE FISH

Moscow VOPROSY IKHTIOLOGII in Russian Vol 16 No 6 1976 signed to press 5 Mar 75 pp 1097-1102

BUYANOV, N. I., ROZHDESTVENSKAYA, A. D., LAPTEV, M. I., and STEPANOVA, V. D., Polar Scientific Research and Design Institute of Sea Fisheries and Oceanography (PINRO), Murmansk; Institute of Biophysics, Ministry of Health USSR, Moscow

[Abstract] The Kola AES is located on the shore of a very large reservoir of the Kola peninsula. It uses a large quantity of water to cool its reactors; the consumption of water now is 40-50 m^3/sec, it is heated to about 10-26°, and is released in another area of the reservoir, which has low water exchange. The future, planned output of heated water will be 100 m^3/sec, which will be, in effect, a heat pollution. Discharge of the heated waters from the Kola AES into Lake Imandra has been used successfully to grow marketable fish--rainbow trout--as a fish-farming venture. No substantial contamination has been measured in the water basin from artificial radioactive materials in the first year of operation of the AES. The authors caution that further studies are necessary before fish-farming in the discharge waters is accepted. Figure 1; Tables 3; References 10: 8 Russian, 2 Western.

USSR UDC 577.17.049:597.554.3

APPLICATION OF TRACE MANGANESE ENRICHMENT ADDITIVES ON VARIOUS STAGES OF ONTOGENESIS OF PIKE PERCH, CARP AND BREAM

Moscow DOKLADY VSESOYUZNOY ORDENA LENINA AKADEMII SEL'SKOKHOZYAYSTVENNYKH NAUK imeni V. I. LENIN in Russian No 9, Sep 76 pp 38-39

SHKODIN, N. V., and VOROB'YEV, V. I., candidates of biological sciences

[Abstract] The authors have already demonstrated a requirement of fish in spawning-incubation reservoirs for manganese traces. In the present work they have sought to establish optimal doses of $MnCl_2$ at various stages of ontogenesis of pike perch, carp, and bream. Studies were performed at the Shirokiy spawning-incubation kolkhos in Astrakhan Oblast. Supplements of Mn, in appropriate levels, were found to stimulate sexual maturing of these fish, and the embryonic and postembryonic development of the fry. Mn supplement level, under conditions of the spawning-fish raising enterprise, is recommended at 1.8 kg/ha for fish sires, 21.6 for incubating fish eggs, and 9.0 for growing fry. Tables 2; References 7 (Russian).

CSSR

UDC 616-097.5(:576.8582)-078.73

HEMAGGLUTINATION-INHIBITION ANTIBODIES AGAINST SOME ARBOVIRUSES IN THE SERA OF VIETNAMESE CITIZENS

Prague CASOPIS LEKARU CESKYCH in Czech Vol 115 No 46 1976 pp 1432-1434

SEKEYOVA, M., GRESIKOVA, M., HRUZIK, J., and LUKACOVICOVA, Z., Comenius University, Bratislava

[Text-English language abstract supplied by authors] The hemagglutination-inhibition test was employed to examine pairs of sera of 124 citizens of the Vietnamese Democratic Republic for the presence of antibodies against some of the alphaviruses and flaviviruses. Antibodies against the Chikungunya virus (alphaviruses) were ascertained in 15%. As regards flaviviruses, the highest proportion of positive reactions was found against the virus of Japanese encephalitis (66%). Specific hemagglutination-inhibition antibodies were also found against the dengue virus. Tables 4; References 4: 1 Czech, 3 English.

USSR UDC 615.372:576.851.315)015.46.076.9

A STUDY OF THE IMMUNOLOGICAL EFFICACY OF ORAL CHOLERA CHEMICAL VACCINE ON THE EXPERIMENTAL ANIMALS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 5 Mar 76 pp 115-119

DZHAPARIDZE, M. N., YEGOROVA, V. D., KARAYEVA, L. T., SUMAROKOV, A. A., GOR'KOVA, A. V., MARCHUK, L. M., ISUPOV, I. V., KULIKOVA, V. L., YABLOKOVA, L. N., MARTENS, L. A., PAVLOVA, L. P., KOVALENKO, N. M., KOROVKINA, G. I., PAVLOV, V. A., and NAZAROVA, L. S., All-Union Scientific Research Plague Control Institute "Mikrob", Saratov

[Text-English language abstract supplied by authors] Three fractions isolated from the culture fluid of the 569B cholera vibrio strain were studied. The fractions differed by the extent of purification, and the content of the toxoid and the O-antigen. In intraintestinal application to rabbits all of them caused formation of antitoxins and vibriocidal antibodies in the blood serum. The immunizing dose of the preparations in intraintestinal administration exceeded the dose required for subcutaneous application. Fraction I should be used for producing tablet form of cholera vaccine because it was least toxic and provided the greatest yield. Figure 1; Tables 3; References 14: 5 Russian, 9 Western.

USSR UDC 615.371:576.851.49).015.44

MORPHOLOGICAL CHANGES WITH USE OF LIVE VACCINE FROM THE SUPPRESSOR S. TYPHIMURIUM REVERTANT IN MODEL EXPERIMENTS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 18 Feb 76 pp 130-134

SHUL'MAN-SATIN, B. B., and SHUSTER, B. YU., Moscow Institute of Vaccines and Sera imeni Mechnikov

[Text-English language abstract supplied by authors] The work was aimed at the morphological study of the harmlessness and protective activity of the live salmonella vaccine prepared from the suppressor S. typhimurium revertant intended for the prophylaxis and treatment of carrier state after the sustained food poisoning. It was shown in model experiments on mice that oral immunization caused no development of pathological changes, and at the same time prevented the appearance of the disease in infection of the animals by the virulent strain- S. typhimurium No. 415 in a dose of 100 LD_{50}. A marked immunomorphological reaction developed in the small intestine and the lymphoid organs. Figures 2; References 20: 11 Russian, 9 Western.

USSR UDC 615.371:576.851.49).015.46(612.323+612.333

IMMUNOLOGICAL INDICES IN DIGESTIVE TRACT SECRETIONS IN SUBCUTANEOUS AND ORAL VACCINATION AGAINST TYPHOID FEVER

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76
signed to press 27 May 76 pp 124-130

PERSHIN, B. B., CHAKHAVA, O. V., LEBEDEV, K. A., STEFANI, D. V., TORICHNEVA, D. YU., SERGEYEV, V. V., and KREYNIN, L. S.

[Text-English language abstract supplied by authors] Volunteers were vaccinated subcutaneously and orally against typhoid fever; a determination was made of immunological reactions in the digestive tract secretions. Oral vaccination caused a much greater production of the secretory IgA than the subcutaneous one. Immunoglobulins of classes G and M were revealed in the intestinal contents only in a few volunteers. In studying the coprofiltrates obtained before the vaccination there was shown for the first time the presence of normal coproantibodies to typhoid fever, dysentery, tetanus, diphteria, botulism and gas gangrene; in the majority of the cases there was found a correlation between the presence of normal serum and secretory antibodies. Subcutaneous and oral vaccination caused an increase of coproantibodies specific for the vaccines used. Besides, the same vaccines stimulated the nonspecific response expressed in a rise of the level of other species of antibodies. Specificity of coproantibodies in the inhibitory passive hemagglutination reaction was demonstrated in the majority of the coprofiltrates examined. Figures 2; References 19: 13 Russian, 6 Western.

USSR UDC 615.371:576.851.45).086.3

ELECTRON MICROSCOPIC STUDY OF DRY LIVE PLAGUE VACCINE EB BY THE SCANNING METHOD

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 30 Dec 75 pp 58-59

KONNOV, N. P., and ANISIMOV, P. I., All-Union Scientific Research Plague Control Institute "Mikrob", Saratov

[Text-English language abstract supplied by authors] Dry live plague vaccine EB was examined under the electron microscope; it appeared that in the mentioned preparation the bacterial cells were enclosed in the artificial sucrose-gelatine capsule of the stabilizer which apparently maintained the vital activity of the microorganisms in the state of anabiosis by forming a stable bond with the bacterial body. No references.

USSR UDC 615.373.6:547.962.4).015.46:576.858.097.3

PROPHYLACTIC AND THERAPEUTIC USE OF HOMOLOGOUS GAMMA GLOBULIN AND THE EFFECT OF IT ON NON-SPECIFIC FACTORS OF ANTIVIRAL IMMUNITY

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 19 Feb 76 pp 134-137

SUBBOTINA, L. S., BYKOV, I. P., LEDENTSOVA, R. YU., and VODYANNIKOVA, A. A., Sverdlovsk Scientific Research Institute of Viral Infections

[Text-Russian language conclusions to report] Administration of placental gamma globulin in prophylaxis of tick encephalitis does not cause any substantial increase in level of serum interferon or of beta-lipoproteids, but it does promote a profound rise in interferon-producing activity of the leukocytes. In contrast when gamma globulin is used to treat tick encephalitis disease, a marked decrease appears in the interferon-synthesizing activity of the leucocytes, but this does not reach the level--in the period of convalescence--which prevails in healthy individuals. Tables 2; References 15: 12 Russian, 3 Western.

CSSR

UDC 616.28-008.1-057-07

OTOLOGIC AND AUDIOLOGIC CRITERIA IN THE ASSESSMENT OF OCCUPATIONAL DISORDERS OF HEARING

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 336-347

TOMANEK, R., Institute of Hygiene and Epidemiology, Prague Center of General and Communal Hygiene

[Text-English language abstract supplied by author] The article mentions the basic features of the occupational audiologic disorder due to noise, its audiometric symptoms and the procedure in the examination. In differential diagnosis, the occupational disorder of hearing is well differentiated from degenerative diseases due to the fact that when the person has been removed from the noisy working environment the disorder does not worsen any more. With occupational hearing disorders the accurate differentiation and evaluation from presbycousis without special audiometric tests is difficult. Differentiation of hearing disorders from noise involving toxic damage, damage by acoustic trauma and postcommotive and postinfectional conditions is only possible when comparing the results of previous examinations. The same procedure will be taken in the evaluation of conductive disorders with nervous participation, be it otosclerosis or in conditions with inflammation of the middle ear. With these employees, noise at the workplace may either represent the factor inducing greater susceptibility, or accelerating the process of the basic nervous damage of hearing. The difficulties of differential diagnosis are proved by several cases and by demonstrations of audiograms obtained during activity of assessment. Figures 16; Tables 2; References 19: 14 Czech, 5 Western.

CSSR UDC 616.13-07

EXAMINATION OF PATIENTS WITH ARTERIAL DISORDERS

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 328-331

SPACIL, J., and LINHART, J., Central Institute of Cardiovascular Diseases; Institute of Clinical and Experimental Medicine, Prague

[Text-English language abstract supplied by authors] If traumatic vasoneurosis is suspected, it is necessary to exclude Raynaud's disease or Raynaud's syndrome, which occurs most frequently due to irritation of the nervous vascular bundle in the region of the upper thoracic aperture or less frequently in organic diseases, most probably with arteritis or collagenesis. The functional examination, besides being directed towards the present proof of the vasospastic stage, should test the ability of normal vasodilation and thus exclude an organic affliction. The simplest method is to measure the skin temperatures on the upper extremities after body heating. Of potential value, is the measurement of local pressures on the fingers. Arteriography should be carried out mostly at special work places only in patients suspected of arterial obliteration. Table 1; References 10: 6 Czech, 4 Western.

CSSR UDC 616.7-057

OCCUPATIONAL DISEASES OF THE MOTORIC SYSTEM

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 332-335

TEISINGER, J., and SUNTYCH, F. (deceased), Institute of Hygiene and Epidemiology, Prague, Center of Labor Hygiene and Occupational Diseases, Prague

[Text-English language abstract supplied by authors] According to the former list of occupational diseases, compensation was only paid in case of damage of the motoric system, especially the joints, bones and tendons in case of diseases due to vibrations, fluorosis and work in caissons. More recently the list also includes diseases due to overload of the motoric system, this concerning chiefly bursae, tendons, their sheaths and muscle tendrils, possibly menisci. The report discusses briefly the formation, daignosis and assessment of these diseases. A brief consideration of Dupuytren's contracture, is added. No references.

CSSR

UDC 616.2-097

IMMUNOLOGY IN RELATION TO RESPIRATORY DISEASES

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 319-321

JEZKOVA, Z., Institute of Hematology and Blood Transfusion, Prague

[Text-English language abstract supplied by author] The report evaluates chiefly the immunologic results in respiratory diseases. In respect to the principle of the methods, a survey is afforded on the current methods, suitable for the proof of tissue antibodies. The proof of the circulating antibodies may prove the activity of the process, possibly specify its location. With interstitial lung fibrosis, it is of differential diagnostic importance. When evaluating the results it is necessary to consider the possibilities of the applied method, its balance in consideration of histologically inaccurate results, but also the clinical stage of the disease, the therapy and the individual immunologic barrier in each patient, which can be influenced by several circumstances. References 8: 3 Czech, 5 Western.

CSSR

UDC 613.6:616.12(-14-057

CARDIOVASCULAR CHANGES CAUSED BY VARIOUS FACTORS OF THE WORKING ENVIRONMENT

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 321-328

PREROVSKA, I., Clinic of Occupational Diseases, Faculty of General Medicine, Charles University, Prague

[Text-English language abstract supplied by author] The reaction of the cardiovascular system to occupational load is usually of secondary nature, only rarely is there primary damage of the heart and vessels by occupational noxae. The report affords a survey of disorders of the cardiovascular system which may be induced by the effect of different chemical noxae, aggresive dusts or by the effect of physical influences upon organism. Literature data on pathologic findings were compared with the author's own experience. Due to the fact that cardiovascular changes in occupational diseases are not specific for these diseases alone, similar findings currently occurring in internal medicine, differential diagnosis of their etiology must be considered. References 67: 8 Russian, 13 Czech, 46 Western.

CSSR UDC 612.2-057-079.4

DIFFERENTIAL DIAGNOSIS OF OCCUPATIONAL DISEASES OF THE RESPIRATORY SYSTEM

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 312-318

NAVRATIL, M., Institute of Hygiene and Epidemiology, Prague, Center of Labor Hygiene and Occupational Diseases

[Text-English language abstract supplied by author] Pneumoconioses are divided--from the roentgenologic aspect--into the nodular type and the type of interstitial fibrosis. It is necessary to differentiate, the roentgenologic diagnostics in the first type, further dispersed focal forms, chiefly tbc; in the advanced forms also the possibility of a carcinoma must be considered. With the second type, a similar picture is afforded by cryptogenic fibrotizing alveolitis and by systemic disease of the connective tissue. Differential diagnosis is supported by examination in respect to tuberculosis, immunologic relations, neoplasia and special bioptical examinations. Pleural changes are especially marked with asbestosis in form of pleural hyalinoses, which may occur to a small extent also in the unexposed population, where their etiology is not clear. The most frequent disease of the respiratory pathways is in the form of chronic bronchitis which, however, may be due to several other non-occupational causes. In case of asthma bronchiale, the patient must be examined from the aspect of allergologic tests and their results must be evaluated in agreement with the possible allergic effect of the working environment. Examination of lung functions plays a special role in differential diagnosis; although not disclosing the etiologic cause, it shows the extent and type of disorder. The results obtained are then assessed on basis of knowledge on the functional disorders accompanying other diseases of the respiratory system.
Tables 2; References 24: 1 Russian, 4 Czech, 19 Western.

CSSR UDC 616.15-057-079.4

DIFFERENTIAL DIAGNOSIS OF HEMATOLOGIC SYNDROMES IN OCCUPATIONAL DISEASES

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 297-304

DAVID, A., Institute of Hygiene and Epidemiology, Prague; Center of Labor Hygiene and Occupational Diseases

[Text-English language abstract supplied by author] When assessing hematologic findings in occupational diseases it is necessary to decide gradually whether the finding exceeds the standard limits (especially important in the prevention of damage), to classify the change amongst one of the general hematologic syndromes and to ascertain by proof of the inducing agent its occupational cause. In occupational diseases the most frequent are changes of the number of blood elements which are divided in the report, according to etiology, into polyglobulias (hemoconcentration in acute poisonings and dehydrations, with respiratory insufficiency),anemias (hemolytic from direct hemolysis and due to the presence of Heinz' bodies, dyshemopoetic with lead poisoning, aplastic), reactive leucocytoses (they accompany acute poisonings, especially by carbon monoxide), leucopenia (predominantly due to damage of the bone marrow by ionizing radiation, the toxic or allergic effect of chemical noxae), thrombocytopenia, leukemia (from benzene and ionizing radiation), hemorrhagic diatheses and changes of the hemoglobin molecule (carbonylhemoglobin, methemoglobin). The pathogenesis of changes and differential diagnosis in comparison with similar syndromes of non-occupational etiology, are discussed.
Tables 2; References 42: 4 Russian, 12 Czech, 26 Western.

CSSR UDC 616.5-057-079.4

DIFFERENTIAL DIAGNOSIS OF OCCUPATIONAL SKIN DISEASES

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 9 1976 pp 304-311

JIRASEK, L., Second Skin Clinic, Faculty of General Medicine, Charles University, Prague

[Text-English language abstract supplied by author] Differential diagnosis of occupational skin diseases has two basic problems: 1. To determine the correct diagnosis of the disease which might be an occupational disease and to differentiate it from similar non-occupational diseases (e.g., differentiation of allergic contact eczema from atopic eczema or from mycosis with mycid) and, 2. to differentiate the occupational disease from the same non-occupational disease (e.g., allergic contact eczema derived from the working environment to be differentiated from allergic contact eczema derived from the home environment). The work is very demanding and requires great knowledge and experience, exact procedure of examination making use of all available methods of diagnosis and strict criteria of assessment which have already proved satisfactory for a number of years. The author reports on the individual methods of examination and criteria of assessment. In a special part he discusses systematically the differential diagnostics of individual occupational skin diseases and the examinations and criteria demanded for them. He also mentions circumstances which disturb such examinations, especially unsuitable application of corticoid externals prior to the examination and late dispatch of patients for examination. If the required criteria are precisely fulfilled, no essential errors can be made, however, when assessing whether skin diseases are of occupational origin.
No references.

USSR/GDR UDC 621.43.013.19:665.44

DETERMINATION OF THE CARCINOGENIC HYDROCARBON BENZ(A)PYREN IN EXHAUST GASES OF GASOLINE ENGINES OF LIGHT AUTOMOBILES IN TESTS BASED ON THE "EUROPEAN CYCLE"

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 7 Jul 75 pp 50-53

SHABAD, L. M., KHESINA, A. YA., SMIRNOV, G. A., STEPINA, N. YE., KHYUNIGEN, E., PRITCH, V., YASKULLA, N., and NAUMANN, M., Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow; Center for the Study of Automobile Exhuast Gases (Abgaspruefstelle der DDR), Berlin, GDR

[Abstract] The authors report a method for exhaust gas sampling, extraction, chromatographic fractionation, and qualitative and quantitative fluorescent spectroscopy of benz(a)pyrene (BP). The auto is run on a "European drive cycle," on turning drums; samples are obtained from the exhaust pipe which is attached to a collecting device which is illustrated in the report. Analytical procedures are outlined. The method has been used to test 4 types of autos widely used in the CMEA participating countries (makes identified are the Zhiguli and VAS 2101). Figure 1; table 1; references 6: 4 Russian, 2 German.

CSSR UDC 616.24-603.65-07-084

DIAGNOSIS AND PREVENTION OF SILICOSIS AND MINERS' PNEUMOCONIOSIS (Review of papers published in the CSSR)

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 8 1976 signed to press 28 Aug 75 pp 283-287

EISLER, L., and ANDEL, A., Department of Occupational Diseases, KNs P, Ostrava, Kraj Hygiene Station, Ostrava

[Text-English language abstract supplied by authors] The paper summarizes the main methods used for the diagnosis and differential diagnosis of the forms of pneumoconiosis most frequently encountered in the CSSR. The authors devoted therefore their main attention to the problem of pneumoconiosis from coal mines, the metallurgical and pottery industry. Asbestosis was not included in the review with regard to its specific course. In clinical prevention they consider decisive a comprehensive evaluation of the health status of threatened workers in relation to the severity of the risky exposure. In the X-ray diagnosis they emphasize early detection of initial changes according to standards of the international classification of pneumoconioses. They recommend that in those instances where it is necessary to transfer threatened healthy workers the experience from the Ostrava-Karvina coal basin (an account of which is given in the paper) should be applied. Table 1; References 57 (includes 1 East German).

CSSR UDC 613.6:616-057:621

HEALTH STATUS OF EMPLOYEES IN HEAVY ENGINEERING

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 8, 1976 signed to press 15 Dec 75 pp 275-278

JAROS, F., and LISY, D., Department of Occupational Diseases, NsP, Trencin

[Text-English language abstract supplied by authors] The authors investigated which disturban ces of health, including occupational diseases, occurred in workers in a heavy engineering plant in Trencin. They ascertained that work under excessive noise conditions led to serious occupational impairment of hearing in 9 employees, work at excessive vibrations led to disorder from vibrations in 1 employee, work with cooling oils induced the formation of toxic contact dermatitis in 3 employees. On the basis of findings obtained, they proposed technical and medical prevention measures which should decrease the occurrence of occupational diseases in the plant. Figures 2; tables 3; references 6 (Czech).

CSSR UDC 613.6:616.24-003.65(576.284)-057:662

THE DEVELOPMENT OF SILICOSIS AS AN INDICATOR OF ORE MINE HAZARDS

Prague PRACOVNI LEKARSTVI in Czech Vol 28 No 8 1976 signed to press 25 Mar 75 pp 259-263

SPACILOVA, M., TINTERA, M., and DAVID, A., Charles University, Prague; Okres Hygiene Station, Kutna Hora; Institute of Hygiene and Microbiology, Prague; Center of Labor Hygiene and Occupational Diseases

[Text-English language abstract supplied by authors] The occurence and course of silicosis was evaluated in miners of an ore mine and compared with the antidust measures. About 300 miners worked in the mine, pneumoconiotic changes were ascertained with 111, i.e., in more than one third of exposed persons. During the studies 40% of the cases passed into the stage of complicated lung silicosis and one third of the afflicted persons died at a mean age of 56.3 ± 9.1 years. The formation of pneumoconiotic changes depended directly on the unfavorable hygienic conditions. All men in whom silicosis developed till now--excepting 3 cases with a doubtful diagnosis--had started hazardous work in the years 1940-1952, i.e., during the time since the opening of the mine till introduction of the first provisional artificial ventilation. Their mean exposure till falling ill was 7.9 ± 1.15 years. Thus the majority of them terminated work roughly in 1960 at the time when effective ventilation and thorough moistening of the material was introduced. It appeared thus from the results that the mine is very offensive and that there exists a clear direct relation of the formation of silicosis to unfavorable working conditions, i.e., a high dust concentration. Figures 4; Tables 2; References 12: 11 Czech, 1 Western.

USSR UDC 617-001.34.003.1

ANALYSIS OF ECONOMIC LOSSES DUE TO VIBRATION DISEASE

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 29 Sep 75 pp 40-43

OSINTSEV, V. YA., BUSHUYEVA, G. A., candidate of economic sciences, and KATSNELSON, B. A., professor, Sverdlovsk Institute of Labor Hygiene and Occupational Diseases

[Abstract] Very few analyses have been made of the efficacy of anti-vibration measures, and those done show some inadequacies. The authors calculate that the mean loss from one incidence of vibration disease of a machine construction worker amounts to 9753 rubles--this is 2.5 times less than the mean low from silicosis in coal production--and 77% of this is due to losses related to time of disability, 15.8% to expenditures for care, 4.7% in payment of claims, 1.8% for invalidity, and 0.7% for labor organization. However, expenditures for prophylaxis of vibrational disease has effectively produced a general lowering of morbidity, and its attendant losses. Efficiency is expected to improve with increased productivity. Data were derived from a large machine tool enterprise (unnamed) in 1959-1973.

USSR UDC 615.917:547.491.3'391.1).032.77

TOXIC ACTION OF ACRYLONITRILE ON THE BODY OF EXPERIMENTAL ANIMALS UPON ITS ENTRY THROUGH THE SKIN

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 25 Aug 75 pp 103-105

ZOTOVA, L. V., Central Scientific Research Laboratory of the Saratov Medical Institute

[Abstract] Acrylonitrile (ACN) is widely used as a copolymer in the production of synthetic rubber, plastics, and artificial fibers. It is readily absorbed through the skin. The author examined the possibility of intoxication by ACN when absorbed through the skin. White rats were subjected to acute, subacute and chronic ACN administration. ACN has a general toxic effect on the animal body, inducing predominantly vascular damage. Its toxic action depends on the effect of the CN-group which actively disrupts tissue respiration, and bodily oxidation-reduction processes leading to severe vascular disturbances (blood stagnation, hemorrhage). The ACN molecule itself, or its metabolites may also cause damage. Threshold dose in a chronic experiment is set at 0.11 mg/kg. Incidence of ACN poisoning of man under industrial conditions is cited. Table 1; references 5 (Russian).

USSR UDC 616.34-036.11-078:576.851.49.07

IDENTIFICATION OF CONDITIONALLY PATHOGENIC ENTEROBACTERIA IN LABORATORY PRACTICE AND DIAGNOSIS OF ACUTE INTESTINAL DISEASES

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 1 Mar 76 pp 73-77

KALASHNIKOVA, G. K., DEREVLEVA, Z. YA., GUROVA, L. I., IGNAT'YEVA, YU. M., BABOSHKO, A. I., NECHEPORUK, A. G., SMIRNOVA, I. D., and CHUVASHOVA, K. M., Central Scientific Research Institute of Epidemiology, Ministry of Health USSR, Moscow, and, Sanitary Epidemiological Station, Chimki city, Moscow Oblast

Abstract The etiological significance of conditionally pathogenic enterobacteria (Citrobacter, Hafnia, Klebsiella, Proteus, Providencia) in intestinal diseases has not been resolved. 361 cultures have been isolated from patients with various acute intestinal infections, from individuals who had recovered, from individuals in contact with patients, and from healthy people (prophylactic tests) which show presence of representatives of these organisms. Citrobacter serological groups 04,01,03,05,022, and 08, especially the 04, were most frequently encountered. Diagnosis of intestinal diseases in laboratory practise should use a combination of biochemical and serological procedures for complete information on the causative microorganisms. Tables 2; References 15: 13 Russian, 2 Western.

USSR UDC 615.37.012:66.09

SOME ASPECTS OF THE INTENSIFICATION OF PRODUCTION OF BACTERIAL PREPARATIONS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 5 May 76 pp 30-34

BASNAK'YAN, I. A., and ZAPOROZHTSEV, L. N., Moscow Institutes of Vaccines and Sera imeni Mechnikov

[Abstract] Efforts to improve the quality of bacterial and viral preparations in response to the task set by the 25th Congress of the CPSU--raise efficiency in production and increase the quality of production--should be based on modernization of the productive process which will lead to a rise in labor productivity. One aspect of this broad subject is the serious need to improve the method of cultivation of microorganisms. The author describes four types of deep cultivation, viz., periodic, multiperiodic or multicyclic, semi-periodic or semi-continuous, and continuous. The multiperiodic, or multicyclic, consists of a number of sequential cycles which can be accomplished in the same reactor, leaving for seed in each subsequent cycle a part of the culture from the preceding, or, using part of the grown culture of

each preceding cycle as a mother culture for the next seeding; in this case the specific rate of growth in each cycle rises at first and then declines. The semi-continuous method involves adding culture and nutrient medium at such volume and frequency that the specific rate of growth is kept constant and the concentration of microorganisms stays about the same. This latter, semi-continuous, method is claimed to produce more biomass or toxins in a shorter time. A specific example of the advantage of the semi-continuous method is presented from Zaporozhtsev's candidate dissertation (1975). Figures 3; Table 1; References 3 (Russian).

USSR UDC 616.9-022.32-07:616.2-097.3-078

PROTECTIVE MECHANISMS OF THE RESPIRATORY ORGANS IN THE INITIAL PHASE OF AEROSOL INFECTION

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII No 11 Nov 76 signed to press 6 Jun 75 pp 6-10

GAPOCHKO, K. G., Military Medical Academy imeni S. M. Kirov, Leningrad

[Abstract] The author has reviewed current, for the most part non-Soviet, concepts of protective mechanisms of the respiratory organs. The view of Yu. S. Pisarevskiy (1963) is cited concerning the active role of lymphoid tissue in specific immunity through its production of antibodies. A description is presented of the activity of the fibrillary epithelium and the phagocytic activity of the alveolar macrophages in the terminal sectors of the lungs. Bacteriological, radiometric, and immunofluorescent studies indicate that disinfection of deep parts of the lungs from inhaled microorganisms takes place, not by mechanical removal, but as the result of active phagocytosis and disintegration by the free alveolar macrophages. The non-specific mechanisms can be strengthened by contact with other microorganisms, live vaccines and polysaccharides of bacterial origin. A. A. Smorodintsev (1964), and M. I. Sokolov (1968) are quoted as pointing out that a number of factors, in addition to interferon, are involved in non-specific resistance, e. g., hereditary and hormonal characteristics, body temperature, types alpha, beta, and gamma serum inhibitors, some enzymes, basic proteins, radiation action, and others. Concrete data are lacking on the role of these factors in inactivation of viruses which reach the respiratory areas. References 30: 5 Russian, 25 Western.

USSR UDC 628.312:576.8

PRESENCE IN SEWAGE OF VARIOUS FILTRABLE FORMS OF BACTERIA

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 20 Nov 75 pp 116-117

KIRSANOV, G. P., Mordovian State University, Saransk

[Abstract] The authors prepared a new nutrient medium to grow various species of filtrable forms of bacteria from sewage: an enzymatic hydrolysate from residues of mycelia and brewers yeast. Test materials were obtained from 12 kindergartens and 2 infectious diseases hospitals in Saransk. From 169 samples, the author isolated a number of various species of filtrable forms of bacteria, 5 strains were identified; 19 strains, which passed through the EK plate on a Zeitz filter, were not identified. The author's medium is said to be maximally effective for isolation of the bacterial forms from sewage.

USSR UDC 613.2:576.858(047)

SURVIVAL OF VIRUSES IN FOOD PRODUCTS

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 14 Jan 75 pp 75-81

AYZEN, M. S., and PILLE, E. R., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman, Ministry of Health RSFSR: Moscow Scientific Research Institute of Viral Preparations of the Ministry of Health USSR

[Abstract] The authors have reviewed the literature on food as a factor in transmission of viral diseases. Analysis of reports of infection of food products by poliomyelitis, viral hepatitis and tick encephalitis, for example, have pointed up the possibility of food product contamination by viruses. Reports of persistence of human enteroviruses in foods, particularly milk, cheese, and meat, are cited. Contamination of vegetables with enteroviruses through sewage irrigation has been reported by the Soviet author Bagdasar'yan. Murphy's studies, confirmed by V. T. Kovtuna, on murine encephalomyelitis and poliomyelitis invasion of undamaged root systems in infected soil are described. I. B. Dobrier has noted (1971) that short-term pasteurization of milk does not assure inactivation of all enteroviruses. Studies of meat contamination by viruses are few in number. Ayzen and Pille have contributed experimental studies in this area (1972), as has Goldblith (1963) with practical studies in cattle. Ayzen et al have also studied contamination of fish with human enteroviruses. Some studies of viral inactivation are mentioned. Shift in pH has inactivated viruses. Ionizing radiation has not been successful in complete inactivation of viruses in food. References 41: 22 Russian, 19 Western.

USSR UDC 578.088.9:547.562.1:577.472(28)

LABELLED ^{14}C-PHENOL USED FOR DETERMINING ITS CONTENT AND THE RATE OF ITS UTILIZATION BY MICROFLORA OF RESERVOIRS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 1 Jan/Feb 76 signed to press 23 Mar 75

ROMANENKO, V. I., and KUZNETSOV, S. I., Institute of Biology of Inland Waters, Academy of Sciences USSR, Borok

[Text-English language abstract supplied by authors] Labelled ^{14}C-phenol can be used for determining its content and the rate of its utilization by water microflora in experiments according to Wright and Hobbie. Its utilization obeys laws of enzymatic reactions. The content of phenol in water of Rybinskoye and Sheksninskoe reservoirs varies from 0 to 110 mcgC/litre, and the rate of phenol utilization varies from 0.013 to 7.6 mcgC/hr. Figure 1; Tables 3; References 3: 2 Russian, 1 Western.

USSR UDC 582.282.23.095.3:546.57

BINDING OF SILVER IONS BY CANDIDA UTILIS CELLS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 1 Jan/Feb 76 signed to press 21 Mar 75 pp 119-122

GOLUBOVICH, V. N., KHOVRYCHEV, M. P., and RABOTNOVA, I. L., Institute of Microbiology, Academy of Sciences USSR

[Abstract] Silver is highly toxic for microorganisms; the mechanism of this action has received very little study, the authors have examined the interaction of yeast cells (Candida utilis) with silver ions to elucidate this mechanism. They found that the silver is rapidly bound from silver citrate solution by both living and killed cells, the amount bound depending on concentration of silver ion. The binding is therefore a physical chemical adsorption; it does not depend on temperature, and the silver is readily washed off the cells. 90% of the bound silver is located in the cell walls and cytoplasmic membranes. The authors also found that protoplasts--as well as the intact cells--also bound silver ions, and a large number of them died in the process, and were thus much more sensitive to the toxic action.It is suggested that the toxic mechanism is connected to disruption of the function of the cellular membrane. F.M. Harold (1970) maintains a similar view on the mechanism of action of mercury on microorganisms. Figures 2; Table 1; References 12: 3 Russian, 9 Western.

USSR UDC 582.282.23.095.3

CONDITIONS CAUSING CYANIDE-RESISTANT RESPIRATION OF CANDIDA LIPOLYTICA

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 1 Jan/Feb 76 signed to press 28 Jan 75 pp 146-150

AKIMENKO, V. K., and MEDENTSEV, A. G., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

[Text-English language abstract supplied by authors] Conditions causing cyanide-resistant respiration were studied in the yeast Candida lipolytica. This type of respiration was found when the culture growing on glucose, glycerol, hexadecane, or acetate exhausted the substrate and passed from the logarithmic to stationary growth phase; the same phenomenon can be induced by exhaustion of phosphorus or nitrogen in the glucose medium. The yeast culture growing on lactate, ethanol, pyruvate, a-ketoglutarate, malate, or succinate is characterized by cyanide-resistant respiration even at the beginning of the logarithmic growth phase. The values of pH in the incubation medium have no effect on the time of manifestation of cyanide-resistant respiration. Figures 4; Table 1; References 17: 1 Russian, 16 Western.

USSR

UDC 576.858

ROLE OF ONCOGENIC VIRUSES IN THE FORMATION OF DNA-PROVIRUS IN ACUTE INFECTION OF CHINESE HAMSTER CELLS WITH TICK-BORNE ENCEPHALITIS VIRUS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 231 No 5, Dec 76 signed to press 17 Sep 76 pp 1245-1247

GERMANOV, A. B., DERYABIN, P. G., SEMENOVA, L. A., IONOVA, K. S., URYVAYEV, L. V., and ZHDANOV, V. M., full member of the Academy of Medical Sciences USSR

[Abstract] Zhdanov, et al, (Nature, Vol 256, 1975, p 471; Vpr. virusol., No 1, 1973, p 17) discovered formation of DNA-proviruses in chronic infection of various interwoven cell structures with non-oncogenic, RNA-containing viruses such as tick-borne encephalitis (TBE), Sindbis, and measles. In the present article, the authors have shown formation of DNA-provirus in acute TBE infection, mediated by DNA- and RNA- containing oncogenic viruses. A hypodiploid interwoven culture of Chinese hamster cells was infected with TBE virus strain MF with a plurality of 20 TCD_{50}/kl, and, after 24 hr incubation at 37°, was repeatedly infected with oncogenic viruses--virus OV^{40}, Raus sarcoma virus (RSV), and with both these viruses. Plurality of infection by the oncogenic viruses was 10 TCD_{50}/kl for OV40 and 10 OD_{50}/kl for RSV. DNA was then extracted from the lysed infected cells. The DNA from the hamster cells infected only with TBE did not induce production of virus or a cytopathic action in pig kidney cells; the DNA from cells infected with TBE and, also, the oncogenic viruses did cause transfection of the pig kidney culture. DNAase completely prevents formation of TBE virus by preparations of transfecting DNA; treatment of the preparations of transfecting DNA with RNAase did not affect production of the TBE. Hence, DNA is the matrix for the virus formation; the DNA provirus formation, mediated by the oncogenic viruses, occurred in the TBE infected hamster cells. Table 1; references 4: 2 Russian, 2 Western.

BULGARIA

MORPHOLOGICAL CHANGES IN THE TESTES OF WHITE RATS UNDER CONDITIONS OF CHRONIC ACTION OF VOFATOX 50

Sofia EKSPERIMENTALNA MEDITSINA I MORFOLOGIYA in Bulgarian Vol 14 No 3, 1976 signed to press Nov 75 pp 127-132

ZLATEVA, M., and MALEVA, YE., Medical Academy, Sofia; Medical Faculty, Varna

[Text-English language abstract supplied by authors] The chronic action of the PESTICIDE Vofatox 50 causes changes in the spermatopoietic epithelium of white rats, which depend on the doses and duration of intoxication. There is an increased vascular permeability and degenerative changes in the spermatogenic epithelium, a reduction of the mitotic process and also index of spermatogenesis in the initial stages. The later changes are manifested by more formed changes in the spermatopoietic cells, appearance of gigantic multicellular forms, lack of spermatozoa in a large number of canalicules and fibrosis of blood vessels. The changes in the testis are the result of the general toxic action of the preparation. Figures 2; table 1; references 20: 3 Bulgarian, 10 Russian, 7 Western.

USSR UDC 614.449.57+547.466:547.1 118

STERILANT ACTIVITY OF ALKYLATING COMPOUNDS ON HARMFUL INSECTS (1. Activity of diethyleneimidophosphorylic and diethyleneimidothiophosphorylic derivatives of amino cyclohexane and amino cyclohexylalkanoic acids on domestic flies)

Vilnius TRUDY AKADEMII NAUK LSSR, SERIYA B. in Russian Vol 3 (75) 1976 signed to press 2 Jan 75 pp 137-143

ZAKHAROVA, N. F., KARPAVICHYUS, K. I., POSHKENE, R. A., and PALAYMA, A. I., Institute of Medical Parasitology and Biochemistry, Academy of Sciences Lith SSR

[Text-English language abstract supplied by authors] The chemical sterilization of the domestic flies (Musca domestica L.) (50 females and 50 males in each test) showed that from the compounds investigated N-(diethyleneimidophosphoryl) aminocyclohexane is the most active sterilant, but it has been very toxic. The introduction of acetic acid residues into the cyclohexane ring and lengthening of the side chain significantly diminished the toxicity of the drug, however it diminished also the sterilant activity. The replacement of oxygen by sulphur in the active part of molecule increased the activity and toxicity of the drug. The ethers were more active and toxic in comparison with the Na-salts of analogous compounds. Figure 1; Tables 2; References 10: 9 Russian, 1 Western.

BULGARIA

DIAZEPAM INDUCED ACUTE INTOXICATION OF EXPERIMENTAL ANIMALS AND STUDY OF CENTROFENOKSIN EFFECT ON THEM

Sofia EKSPERIMENTALNA MEDITSINA I MORFOLOGIYA in Bulgarian Vol 14 No 3 1976 signed to press Jan 76 pp 167-170

MIRCHEV, N., Medical Academy, Sofia, Base No 2, Sector for Clinical Pharmacology

[Text-Russian language abstract supplied by author] Diazepam--a Bulgarian product--was administered perorally to 20 white rats, 150 g in weight, and 40 white mice, 20 g. The rats received 650 mg/kg body weight, the mice 620 mg/kg; the author had earlier established an LD_{50} of 730 mg/kg for rats, 535 mg/kg for mice. The administered doses induced acute intoxication especially in the mice. After 2 hr, when the rats were in a soporose state, 50 mg/kg centrofenoksin--p-chlorophenoxyacetyl-beta-dimethylaminoethyl hydrochloride--was given p.o. to half of these rats, and the remainder served as controls. In the case of the mice, they were in coma after 2½ hours, half of these mice were given 50 mg/kg centrofenoksin--repeated 2 hr later--and the remainder were controls. All of the rats which received centrofenoksin remained alive and rapidly recovered from the intoxication; 4 control rats died and recovery of the remainder was very slow. Four of the mice which received centrofenoksin died; in the survivors, intoxication symptoms disappeared quite rapidly. Twelve of the control mice died; the remainder recovered very slowly. These results obtained in the animals correspond with the author's findings of a favorable effect of centrofenoksin treatment of diazepam-intoxicated humans. Figure 1; References 10: 1 Bulgarian, 9 Western.

USSR UDC 615.916:546.48).033

DISTRIBUTION OF CADMIUM IN THE BODY

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 14 Nov 75 pp 10-14

KRASOVSKIY, G. N., YURASOVA, O. I., CHARYYEV, O. G., SKRYPHIKOV, A. I., and KRETOVA, L. G., Institute of General and Communal Hygiene imeni A. N. Sysin, Moscow

[Abstract] Cadmium-109 was administered once (a so-called acute experiment) to white rats to study its accumulation in tissues and organs, time of retention, organs and muscles with largest content of cadmium, and gonadotoxic effect of the metal. The pathogenesis of cadmium intoxication is attributed to its accumulation in the kidney, liver, tubular bones, and spleen. Organs affected were the kidney, bone marrow, sperm, liver, tubular bones, and, in part, the spleen. Cadmium accumulated predominantly in the sperm, as compared to the gonads. Concentrations in the various tissues and organs cited, and in the brain and erythrocytes are tabulated. Figure 1; tables 3; references 10: 7 Russian, 3 Western.

USSR UDC 612.82

QUANTITATIVE REGULATIONAL AND INFORMATIONAL EVALUATIONS OF THE SYSTEMIC ACTIVITY OF THE BRAIN

Moscow FIZIOLOGIYA CHELOVEKA in Russian Vol 1 No 1, 1975 signed to press 9 Sep 74 pp 176-182

SHISHKIN, B. M., Institute of Experimental Medicine, Section for Ecological Physiology, Academy of Medical Sciences USSR, Leningrad

[Abstract] Structural analysis of the central nervous system is complicated by the complexity and probability features of the internal network and numerous interdependent factors, as well as by adaptations and optimizations of overall functioning. To achieve such analysis, a technique involving analogs of computer technology was developed to measure the durability of homeostatic regulation of the central nervous system. Programs were developed to test the durability of regulation through EEG readings with quantitatively established parameters. Constant measurement of the relative coefficient for buffer action, or damping, was made utilizing phasal variations between the output function of the EEG and its initial product. These measurements made it possible to make a dynamic identification of the durability of homeostatic regulation as well as to describe the regulation potential and features of the system of every examined state of the central nervous system. The results can be used for normal patients as well as in pathology to determine individual typological characteristics. Figures 4; references 12 (Russian).

HUNGARY

USE OF THE COMPUTER FOR RECORDING AND FOR MULTIFACETED ANALYSIS OF DATA FROM LARGE SCALE ONCOLOGICAL SCREENING OF THE POPULATION

Budapest MAGYAR ONKOLOGIA in Hungarian Vol 20 No 4 1976 pp 217-225

KARACSONY, I., Dr., and BARTOS, A., Dr.

[Text-Russian language abstract supplied by authors] The aim of the authors was to set up a standardized questionnaire for a new system of large scale oncological screening. The new questionnaire is suitable for recording data by the use of a computer. The computer recording system permits more systematized execution of mass screenings, it decreases the volume of administrative work needed; furthermore, the reliability and accuracy of such a system of recording permits further multifaceted processing of the material. Data from the new system, with the help of perforated cards, are stored in the computer memory and, at any given time, can be produced for further processing. In setting up the questionnaire, the authors were most solicitous that it would satisfy requirements, both of a medical nature and, also, of a technological character, i.e., the requirements of a computer. Figure 1; Table 1; References 12: 8 Hungarian, 4 Western.

USSR UDC 614.2:681.3

MODERN COMPUTER TECHNOLOGY IN RESOLUTION OF PUBLIC HEALTH MANAGEMENT

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12 1976 signed to press 25 Jun 76 pp 3-6

TIMONIN, V. M., All-Union Scientific Research Institute of Social Hygiene and Organization of Public Health imeni N. A. Semashko, Moscow

[Text-English language abstract supplied by author] The paper presents a brief analysis of scientific research works and projects accomplished in recent years by various public health bodies. Trends apparent in developing diverse automatic systems of managment (ASM) in public health, as well as difficulties and shortcomings in this domain are considered. The need for a broad utilization of the system analysis methods, especially in elaborating ways of system (subsystem) data input, is stressed. The author points out the promise offered by automation of analytical functions of the public health management bodies, believing that the solution of analytical problems lays a groundwork for subsequent development of prognostic public health models and for the search of optimal solutions based upon them. In this aspect there are considered the principal scientific trends for the immediate future, along with concrete objectives for working out ASM at all levels of public health administration. No references.

USSR UDC 616.329-006.6-036.2(574.12):546.212

DISTRIBUTION OF ESOPHAGEAL CANCER IN GUR'YEV OBLAST AS A FUNCTION OF MINERAL CONTENT OF DRINKING WATER

Leningrad VOPROSY ONKOLOGII in Russian Vol 22 No 9, 1976 pp 75-76

NEMENKO, B. A., candidate of medical sciences, MOLDAKULOVA, M. M., and ZORINA, S. N., Kazakh Scientific Research Institute of Oncology and Radiology

[Abstract] High incidence of esophageal cancer is reported in Gur'yev Oblast, Kazakh SSR. The authors' analyses found only insignificant amounts of carcinogenic hydrocarbons in the local water, soil, or food, and extremely little source chemicals (nitrites, nitrates) for nitrosamine production. A high mineral content, however, was found in 97 water sources. Low values for molybdenum content were obtained. The territory is being intensively salted by winds from the surface of the Caspian Sea (10 million t per year). The authors include in the number of objective patterns indigenous to rayons with high esophageal cancer morbidity of the population, the deficit of molybdenum in the environment and salination of the water and soil with sulfates, chlorides, magnesium, sodium, calcium, and strontium. References 14: 7 Russian, 7 Western.

USSR UDC 614.3/.4:331.876.4(477.86)(049.3)

CONCERNING THE ARTICLE BY V. F. SHPINEV, and V. S. STUKALO "SOCIAL COMPETITION--AN IMPORTANT FORM FOR RAISING THE LEVEL OF SANITARY-EPIDEMIOLOGICAL SERVICE OF THE POPULATION"

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 10 Nov 75 p 91

RANOV, A. I., Kurgan Oblast Sanepid Station

[Abstract] This article comments on an earlier paper in this journal--No 10, 1975, p 53. The author points out that use of indices of activity of city and rayon sanepid stations for determination of victories in socialist competition and indices of social surveys of medical establishments is not a new idea. Kurgan Oblast has used them, and possibly other Oblasts, certainly the Republic Sanepid Station. The author also complains of difficulty in determination of performance indices, and of the fact that some installations are inspected currently, others not, and some not at all.

USSR UDC 614.777-037:627.81(282.247.415)

SANITARY PROGNOSIS OF THE WATER QUALITY OF THE NIZHNEKAMSK RESERVOIR

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 30 Dec 75 pp 19-21

KREPKOGORSKIY, L. N., and POCHKIN, YU. N., candidates of medical sciences, SOROKINA, N. B., and DEVYATKOVA, T. P., candidates of geographical sciences, Kazan Institute for the Advanced Training of Physicians imeni V. I. Lenin; Perm University imeni A. M. Gorkiy

[Abstract] The projected Nizhnekamsk reservoir is the third on the Kama River (the others are Kamsk and Votkinsk). It will extend from the southwest to the northeast, 300 km--from the dam of the Nizhnekamsk Hydroelectric Station in the area of the Naberezhnyye Chelny city to the dam of the Notkinsk HES at Chaykovskiy city. Extensive studies have been carried on (1956-1974) in spring, summer, and winter, of the affected waters for taste, biochemical oxygen demand, coli titre, presence of petroleum products and phenols. Need for appropriate protective and disinfection facilities is pointed out. Tables 5; references 3 (Russian).

USSR UDC 631.526:537.311/.312

SPECIFIC ELECTROCONDUCTIVITY OF WILD AND CULTIVATED PLANTS DURING GAMMA RADIATION

Moscow DOKLADY VSESOYUZNOY ORDENA LENINA AKADEMII SEL'SKOKHOZYAYSTVENNYKH NAUK IMENI V. I. LENIN in Russian No 9, Sep 76 pp 8-10

NAZIROV, N. N., corresponding member All-Union Academy of Agricultural Sciences imeni Lenin, Kamalov, N., and NORBAYEV, N., candidate of biological sciences, Institute of Experimental Biology of Plants, Uzbek SSR

[Abstract] Wild (G. hirsutum ssp. mexicanum, G. barbadense ssp. darwinii) and cultivated (AN-401, 108-F, Tashkent 1, C-6029) cotton forms, and, also, wild forms of barley (Hordeum L.), barley sorts VIR 65, Unimil arpa, and wheat sorts Bezostaya 1 and Krasnaya zvezda were subjected to Co-60 gamma radiation (15cR, 5 R/s power) at the Institute of Atomic Physics, Academy of Sciences Uzbek SSR. The root and stem of the wild cotton G. hirsutum, in the first period after radiation, were poorer conductors of electric current than its mutant AN-401 and the other sorts of cotton (108-F, Tashkent 1). In the later period the reverse was found; a similar pattern was followed by the other wild cotton G. barbadense. The wild forms of barley showed higher conductivity from the very beginning. The cereals were higher conductors than the cotton. In the later periods of observation (9 days after radiation for the grains, 15 days after for the cotton) conductivity decreased, as a rule, i.e., resistance of the plants to the electric current increased. Tables 3; references 6: 4 Russian, 2 Western.

USSR UDC 597.0/5-14

EYE INJURY IN GRASS CARP CTENOPHARYNGODON IDELLA (VAL.) UNDER CHRONIC ENTRY OF STRONTIUM-90 INTO THE BODY

Moscow VOPROSY IKHTIOLOGII in Russian Vol 16 No 6 1976 signed to press 17 Feb 75 pp 1103-1108

MILOV, V. I., FEDOSEYENKO, V. M., and SHEKHANOVA, I. A., All-Union Scientific Research Institute of Sea Fisheries and Oceanography (VNIRO), Moscow

[Abstract] The carp, 1.5 months old, were maintained in 10-liter aquariums containing radioactive strontium chloride concentrations, 3.20×10^{-8} and 1.10 a 10^{-6} curie/liter. Eye tissue was taken every 10 days for 3 mos. Distribution of Sr-90 in the eye tissues was not homogeneous; the largest quantity was found in the lens, the least in the retina. Sr-90 in photoreceptive cells was localized on the outer membrane of segments of the cones and rods and on the membranes of their discs. Chronic entry of the radionuclide into the carp fry, from the solution with 1.10×10^{-6} curie/liter activity over a 2 mos period, leads to pathological changes in the lens and retinal tissues and, also, to quite significant structural deviations in the photoreceptive cells. Figures 5; References 14: 5 Russian, 9 Western.

USSR UDC 612.791+616.5-001.17-008.6)546.795.02.210

RESORPTION OF Po^{210} THROUGH THE INTACT SKIN AND SURFACE OF BURNS

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 signed to press 10 Dec 75 pp 36-39

BAZHIN, A. G., and PARFENOVA, I. M.

[Abstract] Studies were performed on 180 male white rates 160-180 g. The animals were clipped. Thermal burns (6 cm^2) were produced by an IK-500 electric lamp. Quantity of polonium nitrate, pH 1.5, resorbed through intact skin was 0.013% of the amount applied. Depending on the degree of burn damage, morphological changes were produced in the animal skin; with a second degree burn resorption increased by a factor of two, with a third degree burn, by a factor of 8 to 10. Fifty-five to 85% of the daily resorbed quantity of polonium through the intact and second and third degree burned skin enters the body in 6 hr of contact. For a third degree burn, 87% of the daily resorbed polonium enters the body in 3 hrs. A thermal burn does not affect distribution or excretion of the polonium from the body. Tables 2; references 9 (Russian).

USSR UDC 615.471:616-073.916:681.31

COMPUTER MONITORS IN NUCLEAR MEDICINE

Moscow MEDITSINSKAYA TEKNIKA in Russian No 6 Nov/Dec 76 signed to press 16 Dec 75 pp 34-44

DEVISHEV, M. I., ZUBOVSKIY, G. A., LEVINA, G. A., and URVANTSOVA, I. L., Scientific Research Roentgeno-Radiological Institute, Ministry of Health RSFSR, Moscow

[Text-English language abstract supplied by authors] Problems concerned with the use of desk computers in nuclear medicine are considered, viz., the structure of technical components in radiodiagnostic systems and mathematical logistics, analysis of comparative characteristics of some systems, as well as experience gained by the authors in elaborating specialized mathematical logistics. This experience and a pertinent analysis prompted the authors to conclude that the use of a computer at each stage of a radioisotope investigation is a matter of necessity and of top importance, without, however, being of cardinal aid in establishing a diagnosis. An effective instrument that will be capable of rendering good service to medicine at the present level of its development should be complex diagnostic systems, whose creation will be the aim of further research work. Figures 4; Tables 2; References 12: 3 Russian, 9 Western.

USSR UDC 615.849.114.015.4:612.128:577.155.38

A STUDY OF THE BIOCHEMICAL EFFECTIVENESS OF RADIATION DURING IRRADIATION OF THE ORGANISM IN A STATE OF HYPERTHERMIA

Moscow BIOLOGICHESKIYE NAUKI No 11, 1976 signed to press 30 Mar 76 pp 31-34

MATYUSHICHEV, V. B., TARATUKHIN, V. R. and SHAMRATOVA; Leningrad State University imeni A. A. Zhdanov

[Abstract] It is well known that radiation combined with other stress factors may substantially modify the course and outcome of radiation damage. However, since both the magnitude and the direction of the final effect depend upon the power, sequence and duration of factors present, as well as their particular nature, it is not possible to predict the results of specific combined effects, and experiments must be resorted to. The effect of a thermal load (temperature 36°C, relative air humidity 80-90%, for 4 hrs) and general X-ray irradiation in doses of 25, 50, 100, 250 and 400 R, on ATPase activity in aqueous extracts of the large cerebral hemispheres and the livers of rats was studied, after intervals of 5, 12, 19 and 26 days following treatment. On the average, enzymatic activity of the brain varied by 39%, and of the liver by 43%, for all combined treatments; with separate

irradiation, the activity of both those tissues deviated from the physiological levels by 43%. Overheating of the organism, on the whole, produced more marked changes in the level of ATPase activity of brain tissue (77%) and liver tissue (82%). Post-irradiation reactions were marked by phasality of shifts by day of observation, and also by the absence of proportionality between size of dose and result of the treatment. It is demonstrated that, on the basis of the tests selected, thermal stress leads to a redistribution of the relative power of the effects of individual doses in sequential X-ray irradiation of animals. Table 1; references 4: 3 Russian, 1 Western.

USSR UDC 633.511:537.531

NUCLEASE ACTIVITY IN THE LEAVES OF IRRADIATED COTTON PLANTS, AS DEPENDENT ON THE CONDITIONS OF GROWTH

Moscow DOKLADY VASKHNIL No 11, 1976 pp 18-19

NAZIROV, N. N., corresponding member of the All-Union Academy of Agricultural Sciences, and ARSLANOVA, S. V., candidate of biological sciences, Institute of Experimental Plant Biology, Academy of Sciences Uzbek SSR

[Abstract] The results of this study showed that in the case of wild cotton, RNAase activity is stronger than in the middle-ripening AN-401 radiomutant derived from it. DNAase activity, by contrast, does not change perceptibly after irradiation of the cotton plant. With the onset of the generative phase, it invariably falls off, and then only in the presence of natural daylight. If the days are short, the activity of both enzymes remains almost at the same level as that of the control plant during the entire period of vegetation. RNAase activity was found to be more radiosensitive, and if the day was of average length, it was always somewhat reduced. It is evident that the persistence of DNAase and RNAase activity in irradiated cotton plants at the level of the control plants during short days plays an important role in the restorative processes taking place under the effect of light. Table 1; references 5: 3 Russian, 2 Western.

USSR

UDC 615.471:615.844

TONUS-1 APPARATUS FOR DYNAMIC CURRENT THERAPY

Moscow MEDITSINSKAYA TEKNIKA in Russian No 6 Nov/Dec 76 signed to press 23 Jul 76 pp 57-58

SUKONKINA, YE. A., All-Union Scientific Research Institute of Medical Instrument Manufacture, Moscow

[Text] Dynamic currents are various pulse current chains of sinusoidal form with exponential clip of 50 or 100 Hz frequency. These currents exert a well-expressed analgesic and hyperemic action and are widely used in medical practise to treat many neuromuscular diseases. The "Tonus-1" apparatus--illustrated--for therapy with dynamic currents has replaced the SNIM-1, an obsolescent apparatus with the same application. The "Tonus-1" apparatus is provided with a number of features which satisfy the high requirements for electrical safety of the patient and servicing medical personnel: the apparatus is fitted with Class II protection against electric current injury; it has a block device which assures absence of an output current if the apparatus is accidentally turned on in a non-zero position of the output current regulator; in accidental situations, the apparatus has a special protective device to shield the patient from a substantial increase in current. A number of features are provided also to satisfy the requirements of medical usage: the apparatus doesn't require a ground lead; output current does not depend on the patient's resistance; procedural clocks are present; at the conclusion of a procedure, automatic continuous lowering of output current to zero is provided; on the screen of the cathode ray tube, the form of the output current can be observed. The apparatus circuit is fitted fully with semi-conductor instruments. Included in the set of accessories is a necessary kit of flat-type and cup-shaped electrodes with padding and also three types of electro-adapters. The technical features are: Maximum output current, 50 mA; Number of types of current, 9; 50 Hz frequency voltage supply, 220V; Overall dimensions, mm, 430 x 380 x 160; Weight (without accessories), 9 kg; Weight (with accessories), 12 kg. The "Tonus-1" was developed by the author's institute and is serially produced at the Moscow Electromedical Apparatus Plant.

USSR UDC 616.71-001.5-085.84

USING ELECTRIC CURRENT TO ACCELERATE KNITTING OF BONES

Khar'kov ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 10, Oct 76 signed to press 28 Jun 76 pp 64-66

SIDZHANOV, AH. M., SHABANOV, A. M., PAMURZIN, L. G., ZHARMAGAMBETOV, S. ZH. and SADYKOV, R. G., Aktyubinsk

[Abstract] A report on research done under clinical conditions in 1972 on the feasibility of using electric current to stimulate union of broken bones. An electrode was located in the area of the break by intramedullary insertion through an additional incision or was placed between the broken ends of the bone, and another electrode was inserted into the soft tissue or applied to the skin. The electrodes were fed by a rectifier producing low direct current. Postoperative x-rays showed no signs of osteoporosis even though similar cases without application of electric current showed such symptoms. Postoperative pain, edema and local temperature were reduced by the application of current. It is suggested that the electric current acting in the area of the bone fracture is a regulatory factor in the interaction of ionized molecules of different polarities resulting from the natural piezoelectric properties of bone tissue. References 3 Russian.

USSR UDC 616.831-009.11-053.2-085:616.74-085.844

DIRECTIONAL REGULATION OF BIOELECTRIC ACTIVITY OF THE MUSCLES IN WALKING FOR VICTIMS OF CEREBRAL PALSY

Khar'kov ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE in Russian No 10, Oct 76 pp 72-75 manuscript received 19 Jan 76

YAKOVLEV, N. M. and SMETANKIN, N. A., Leningrad Children's Orthopedic Institute imeni G. I. Turner

[Abstract] A report on research to determine the feasibility of using adaptive regulation of bioelectric muscle activity to correct pathological walking in infantile cerebral palsy victims. Studies were done on 12 patients with spastic diplegia aged 8-14 and 6 healthy subjects of the same age. The muscle selected for control was the anterior tibialis. The electrical activity of these muscles was transmitted through a system of bipolar electrodes and leads to a two-channel bioelectric potential amplifier. The amplified signal is sent to an analog computer that integrates the left and right EMGs and shapes a difference modulus function. When the amplitude of this function falls below a set level, a threshold device actuates external feedback through an electronic stimulator attached to the distal third of the forearm. The stimulus parameters: square pulses of 0.05 ms duration, prf of 10 Hz and amplitude of 4 sensory thresholds. Each subject was given

8 training sessions over a 15 day period. Each session consisted of 5 cycles lasting 4-5 minutes separated by an interval of 2 minutes. The palsy victims showed simultaneous contractions of both calf muscles at first, but after 4-5 days they began gradual formation of alternating contractions of the two symmetric muscles. Starting with the second or third day, the duration of the step increased, and by the fourth or fifth day it had stabilized at 7-8 s. The results indicate that the proposed method of treatment may be of help. Figures 2; references 9: 6 Russian, 3 Western.

GDR

DOSAGE OF ULTRASOUND AEROSOL REQUIRED FOR DIAGNOSTIC TESTS

Berlin, DAS DEUTSCHE GESUNDHEITSWESSEN in German Vol 31 No 43, Oct 76 pp 2033-2035

ROTH, J., Labor Hygiene Center in Niederdorf

[Text-Russian language abstract supplied by author] Examination of 70 patients has shown that the amount of fluid consumed from the ultrasonic individual inhalator "TuR" USI_3 during a short diagnostic inhalation for 3 min. cannot be accepted as a dosage guide line applicable to each patient. The aerosol density calculated by the regression analysis method can be considered only as a reference point. In practice, the amount of fluid for each patient should be determined on the basis of the inhalation duration, provided the aerosol-forming conditions remain constant.

HUNGARY

ISOLATION OF A VIRUS FROM SHEEP CLOSELY RELATED TO BOVINE ADENOVIRUS TYPE 2

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 10, Oct 76 signed to press 24 Oct 75 pp 625-628

BELAK, S., Dr., and PALFI, V., Dr., Budapest

[Text-English language abstract supplied by authors] An adenovirus strain was isolated from 6-8-week old lambs suffering from a respiratory disease. The strain was designated Het/3. The supernatant of the virus-infected lamb kidney tissue cultures agglutinated rat erythrocytes in 1:16 dilution at +4°C. In the complement fixation and agar gel diffusion tests, a soluble antigen common with that of the bovine adenovirus subgroup I was found. No relationship was found in the SN test between the new isolate and the 5 ovine adenovirus serotypes, and the 1. and 3. serotype of bovine adenoviruses. A close relationship, however, was found between the isolate and the 2. serotype of bovine adenovirus. Colostrum deprived lambs were infected with the Het/3 strain, and after an incubation period of 3 days respiratory and enteric symptoms developed. At post mortem examination, catarrhal inflammation of the upper respiratory tract, broncho-pneumonia and enteritis were seen. Histologically, broncho-pneumonia and enteritis was found. The infected lambs shed the virus by the discharges. Het/3 strain was reisolated from the organs of the upper respiratory tract. Spreading of the infection occurred in the contact lambs.
Reconvalescent sera taken from the naturally and experimentally infected animals neutralized the Het/3 strain and the 2. type of bovine adenovirus to the same titre value in the SN test. This can be considered a further evidence of the close relationship between the two strains. Figures 3; Table 1; References 14: 6 Hungarian, 8 Western.

HUNGARY

MASS INCIDENCE OF ADENOVIRUS INFECTION IN LAMBS

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 10, Oct 76 signed to press 20 Apr 76 pp 629-637

BELAK, S., Dr., PALFI, V., Dr., and PALYA, V., Dr., Budapest

[Text-English language abstract supplied by authors] An infectious pneumo-enteritis occurred in suckling and fattening lambs on two large scale farms. It started with enteritis and temperature elevation after an incubation period of 7-8 days, which was accompanied by acute respiratory symptoms 2-3 days later. Sudden deaths were not infrequent in the acute stage. Very often the respiratory process became chronic, and many affected lambs died. Pathological and histological examinations revealed the most characteristic changes in the lungs, upper respiratory tract, kidneys and lymph nodes belonging to the respiratory tract and the intestines.
From the nasal and oral discharges of the acutely ill lambs two adenovirus strains, ORT/111 and GY/14 were isolated. Reconvalescent sera contained neutralizing antobodies to the isolates in 1:16-1:256 titres in contrast to 1:2 titres observed with the sera obtained at the onset of the disease. In cross neutralization tests, ORT/111 strain was closely related to bovine adenovirus serotype 2, while GY/14 strain was closely related to ovine adenovirus type 1. Both strains were found pathogenic in experimental infections. Formalin inactivated $Al_2(OH)_3$ gel adsorbed vaccine was prepared from both strains. The vaccinated lambs remained intact after the challenge, whereas the unvaccinated controls contracted the disease, shed the virus and responded serologically. The results of the vaccination trials provided further evidence that the 2 strains played an etiological role in the disease. Figures 6; Table 1; References 7: 2 Hungarians, 5 Western.

USSR UDC 636.4:612

DIGESTIVE PROCESSES IN SWINE FED WITH GRANULATED FOOD WASTES

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 5, Sep/Oct 76 signed to press 11 Aug 75 pp 727-730

TKACHEV, YE. Z., SEVERIN, V. P., and BABENKO, G. F., All-Union Scientific Research Institute of Animal Husbandry, Dubrovitsy, Moscow Oblast

[Abstract] An experimental unit was set up on the Krasnyy Luch (Moscow Oblast) sovkhoz to granulate food wastes. The unit was devised by the Laboratory for Mechanization of Processing Food Wastes, of the All-RSFSR Scientific Research and Engineering Design Institute of Mechanization of Animal Husbandry. The authors have examined controlled pig feeding with these granulated food wastes. The dried granules contain food wastes (50%), mixed feed (43%), grassy meal (5%), and mineral supplements (2%); protein content is 13.7%. The studies were performed at their laboratories on swines with chronic fistulae of the stomach (Basov) and an external duodenal anastomosis in combination with a fistula of the pancreatic duct (Sineshchekov T-joint). Gastric digestion was studied with a Krasnitskiy probe. Intestinal digestion was studied by performance of daily physiological tests on the pigs with the T-joint fistulas, and subsequent enzymatic and chemical analysis of the pancreatic juice and duodenal chyme. Gastric and intestinal digestion were quite adequate. Rapid penetration of juice and intensive protein hydrolysis in the middle and upper zones of the stomach occurred. The granules do not evoke overall excessive strain on the digestive activity; they stimulate secretion of digestive juices, proteolytic activity of pancreatic juice, and exchange nitrogenous substances between the circulatory and digestive systems. Hence the granules positively affect the digestive processes and are suitable as swine fodder. Tables 2; References 8: 7 Russian, 1 Western.

USSR UDC 636.084

BIOSYNTHESIS IN THE RUMEN AND THE USE OF SYNTHETIC AMINO ACIDS IN FEED FOR RUMINANT ANIMALS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 11(242), Nov 76 pp 71-77

KURILOV, N. V., corresponding member VASKhNIL, SEVAST'YANOVA, N. A., candidate of veterinary sciences, and KORSHUNOV, V. N., and MYSNIK, N. D., candidates of biological sciences, All-Union Scientific Research Institute of Physiology, Biochemistry, and Nutrition of Agricultural Animals

[Abstract] A report on a series of experiments in which an investigation was made of the influence that the feed makeup has on the intensity of enzymatic processes in the stomach compartments of ruminants--synthesis of amino acids, bacterial protein and lipids in the rumen and their passage into the lower parts of the alimentary tract. The experiments were done on sheep with anastomosis between the omasum and abomasum, and also on cows. It was found that the amount of energy and the adequacy of amino acids in the feed are important factors that determine the intensity of synthesis of microbial protein in the rumen. Supplementing feed with synthetic methionine promotes more active synthesis of microbial protein, amino acids and lipids in the rumen, as well as improving utilization by the animal. The addition of 25 g of DL-methionine to balanced feed of cows giving 15-25 kg of milk in the early months of lactation raises productivity up to 11.8% as well as increasing the butterfat yield. For cows giving more than 25 kg of milk per day, the methionine dose must be increased by 2 g of methionine for every extra liter of milk. Tables 2; references 6: 4 Russian, 2 Western.

USSR UDC 636.2:636.084

NITROGEN METABOLISM IN HORNED CATTLE ON A DIET OF COMBINED FODDER AND DRY POULTRY MANURE

Moscow DOKLADY VASKHNIL No 11, 1976 pp 37-39

KIRILOV, M. P., candidate of biological sciences and SABIROV, A. KH., All-Union Scientific-Research Institute of Animal Husbandry

[Abstract] The digestion and metabolism of nitrogen by cows fed combined fodder and dry poultry manure were studied. It was established that the nitrogen of the dry manure was 49.6% that of uric acid. The total of amino acids in the manure was 27.9%. The contents of the rumen, during the feeding of dry poultry manure, show increase in the amount of ammonia, urea and uric acid present. Tables 4; references 4: 3 Russian, 1 Western.

HUNGARY

USE OF TRANQUILIZERS TO DIMINISH STRESS EFFECTS IN COWS AT A LARGE SCALE DAIRY

Budapest MAGYAR ALLATORVOSOK LAPIA in Hungarian No 10, Oct 76 signed to press 10 Mar 76 pp 657-659

BALLASCH, A., Budapest

[Text-English language abstract supplied by author] The rate of decrease in the milk yield under circumstances completely different from the previous ones has been surveyed in large scale dairy farms. Whether this drop in the milk production might be lessened by giving tranquilizers orally, has been studied. It was found that the yield of previously machine milked cows decreased 11.3% during 3 consecutive days following their transfer, whereas that of 12 previously hand milked cows decreased 17.8% during the same period. Two groups of 15 cows each were given 0.1 and 0.3 mg/kg body weight Seduxen (a minor tranquilizer containing diazepam) orally, respectively. The milk yield in the first group decreased 2.3%, and 0.6% only in the second as compared with that of the controls kept under the same feeding conditions. Also on the ground of the cows' behavior a dose of 0.3 mg/kg was found more favorable. Studies are in progress to find less expensive tranquilizer the use of which is not objected from public health's point of view. Figure 1; table 1; references 12: 5 Hungarian, 1 Polish.

USSR UDC 615.916.074(049.3)

DETERMINATION OF INDUSTRIAL INORGANIC POISONS IN THE BODY (Book by I. D. Gadaskina, N. D. Gadaskina, and V. A. Filov: OPREDELENIYE PROMYSHLENNYKH NEORGANICHESKIKH YADOV V ORGANIZME. Leningrad, Meditsina, 287 pp

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 p 121

DATSENKO, I. I., professor, MARTYNYUK, V. Z., distinguished activist of science, Ukr SSR, and SHTABSKIY, B. M., Lvov, (Reviewers)

[Abstract] The introduction of this monograph notes the value of detecting poisons circulating in the body, the interaction of several substances in the biosphere, and the purposefulness of tests in control of the environment. There is still inadequate information on poisons, and in view of this, the reviewers see this monograph as a fine methods text for the toxicologist. The book has 2 parts: a general and a special section. The first considers patterns of entry, transport, conversion, distribution, excretion and current physical-chemical analytical procedures. The special part deals with techniques for chemical analysis of 24 substances, metallic and non-metallic. The reviewers (from Lvov) regret the absence of mention of methods developed at the Lvov Medical Institute. The text is planned for hygienists and industrial pathologists, toxicologists, and bicohemists, and it will be a valuable reference book for them.

USSR UDC 628.35(049.3)

BIOCHEMICAL DISINFECTION OF SEWAGE OF ORGANIC PRODUCTION (Book by G. V. Parutskiy: BIOKHIMICHESKAYA OCHISTKA STOCHNYKH VOD ORGANICHESKIKH PROIZBODST. Moscow, Khimiya, 1975 256 pp)

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 p 122

GABOVICH, R. D., professor (Reviewer)

[Abstract] This is described as a quite useful monograph by Porutskiy which reviews the literature and describes his long years of use of microbiological technology for purification of industrial sewage. Porutskiy sees this application as urgent, and suggests mathematical modeling of water ecology systems and biocenoses as an approach to the task. The book is judged to be useful for sanitary physicians in maintenance of inspection and prevention of failures in disinfection.

USSR UDC 615.916.074(049.3)

DETERMINATION OF INDUSTRIAL INORGANIC POISONS IN THE BODY (Book by I. D. Gadaskina, N. D. Gadaskina, and V. A. Filov: OPREDELENIYE PROMYSHLENNYKH NEORGANICHESKIKH YADOV V ORGANIZME, Leningrad, Meditsina, 1975 287 pp)

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 p 122

GRUSHKO, YA. M., professor (Reviewer)

[Abstract] This monograph is described as a fundamental work which broadly reveals the latest methods for determination of inorganic poisons in the body. It supplies an extensive bibliography. The reviewer suggests that tabulation of indications and contraindications of use of the methods, sensitivity and accuracy of each, and sampling, and information on toxicities of various metal compounds, with maximum permissible levels of concentrations, would have been useful. These suggestions are not meant to disparage the quality of the book.

USSR UDC 615.916.074(049.3)

DETERMINATION OF INDUSTRIAL INORGANIC POISONS IN THE BODY (Book by I. D. Gadaskina, N. D. Gadaskina, and V. A. Filov: OPREDELENIYE PROMYSHLENNYKH YADOV V ORGANISME. Leningrad, 1975, 287 pp)

Moscow GIGIYENA I SANITARIYA in Russian No 10, Oct 76 pp 120-121

YELIZAROVA, O. N., candidate of medical sciences

[Abstract] Metallic compounds are acquiring increasing importance among the substances which affect the health of man, and analysis of the degree of the affection is receiving greater attention. This monograph is devoted to a study of the presence of metallic compounds in biosubstrates. Chapter I discusses patterns of entry, conversion, and distribution of metallic compounds in the body, and their excretion. The authors systematize the inorganic compounds, grouping according to characteristic properties. Chapter 2 surveys physical-chemical methods of analysis. This chapter furnished 141 references to foreign sources. The remaining portion of the monograph is devoted to assay of individual metallic compounds in biosubstrates. The bibliography here is good and goes up to 1972. The text will help for refinement of diagnosis of metallic poisoning. It will serve an essential role as a textbook in scientific and practical institutions.

CSO: 1840

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