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USSR

EAST EUROPE

# USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## BIOMEDICAL AND BEHAVIORAL SCIENCES

## No. 66



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# USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 66

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

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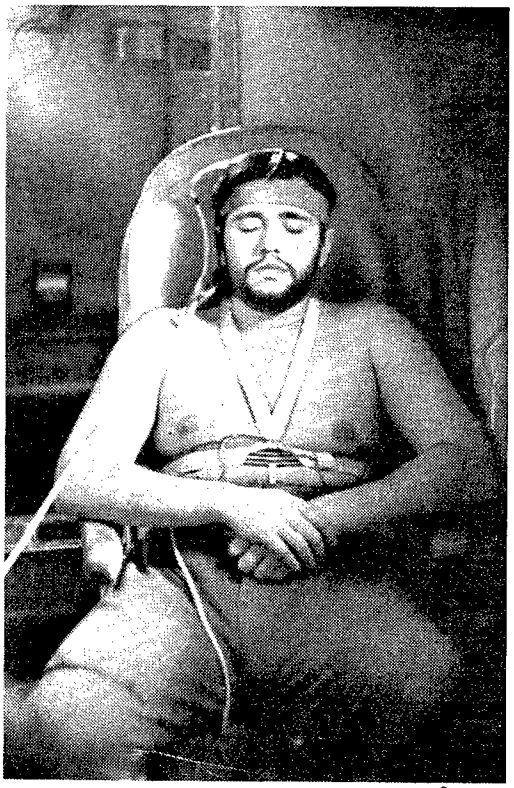
USSR

# A SYSTEM PENETRATED THROUGH AND THROUGH BY RHYTHMS

Moscow NAUKA I ZHIZN' in Russian No 11, 1976 pp 43-47

TYURIN, V., Correspondent of Nauka i Zhizn'

[Abstract] This is a report of an interview by the author with Candidate of Medical Sciences B. S. Alyakrinskiy, head of the laboratories of the Institute of Medical Biological Problems, Ministry of Health USSR. The interview (reported in question-and-answer form) dealt with biological rhythms and their dominating role in the living body. Alyakrinskiy used the title phrase to sum up the body's circadian system of rhythms (see also Nauka i Zhizn' No 3, 1974, and No 6, 1975) and the subordination of all rhythms to the one 24-hour rhythm; the systems are hierarchical, the first being the cerebral cortex, the rhythms of body temperatures, endocrine glands, metabolism and similar internal rhythms being dependent. The mechanism does not run wild, it balances requirements with economy of resources, and responds to external signals. In this sense it is not strictly a 24-hour system, but varies with external events. In space, time signals are not the customary ones; near-earth flights can have a 90-minute "day and night cycle." The body "remembers" its 24-hr cycle but is subjected, by task demands, to altered-content days, e.g., a 23.5 hr day instead of the 24; desynchronization of rhythm can occur. The example of a trip to the Far East is cited: a plane ride upsets work capacity whereas a train journey (10 days) permits gradual adjustment to change in 24-hr signals. Prophylactic measures are advised to avoid desynchronosis in space pilots; the communication system for cosmonauts Popovich and Artyukhin included,



Study of the rhythm of bioelectric activity of the brain

besides contact with the Flight Control Center and other land sites, communication with vessels of the AS USSR, in the Caribbean and North Atlantic. Thus there was round-the-clock information, and they lived in the habitual earth-type routine, sleeping at the usual time, and starting work at 9:30-9:50 Moscow time. Organization of life in space prevents desynchronosis. The same would be true of interplanetary flight, with some nuances: work underload or overload could lead to disturbance of sleep rhythms, and to change in amounts of information and energy exchanged in a daily cycle (see, also, Kosmicheskaya biologiya, No 5, 1971). Crew life management on a protracted interplanetary flight would require adjustments to maintain working ability. Alyakrinskiy states that a biorhythmological method is now used for selection of cosmonauts. Some people adapt slowly, others rapidly, to altered sleep-wakefulness patterns. A potential cosmonaut is subjected on earth to the conditions which prevail in space flight: the activity cycle is reversed, e.g., rest in the day, work and eat in the night, and, after 10 days of this, the test subjects had difficulty in switching back to the customary regime. Alyakrinskiy comments that desynchronosis is typical of all diseases. Certain times of the day affect the efficacy of pharmaceutical and physical therapy, and in all pathologies it is important to apply therapy at the times most favorable to restore synchronization of body rhythms. Medical examinations of patients check body temperature to uncover bodily perturbation. The interview report includes charts depicting relation of time of day to body maintenance activity and response to external stimuli. The attached photo is presented to illustrate study of rhythms of bioelectric brain activity.

BULGARIA

# INHERITANCE AND LOCALIZATION OF THE GENETIC FACTORS CONTROLLING THE RESISTANCE OF CERTAIN VARIETIES OF T. AESTIVUM L. IN RELATION TO RACE 5 of E. GRAMINIS D C. F. SSP. TRITICI MARCHAL

Sofia DOKLADY BOLGARSKOY AKADEMII NAUK in English Vol 29 No 10, 1976 signed to press 12 May 76 pp 1531-1534

BOCHEV, B. V., and GANEVA, G. D., Institute of Genetics and Plant Breeding, Bulgarian Academy of Sciences, Sofia

[Abstract] Establishment of number, origin, and site of the genes controlling wheat resistance to E. graminis tritici is important because of the economic threat of the disease to wheat production. The number and site of the genetic factors controlling the resistance in the individual varieties are not the same. Almost no studies on the genetic nature, number, and localization of those genes which control wheat resistance to the individual races of E. graminis tritici have been made in Bulgaria. The authors report studies of this nature with respect to race 5. Varieties of wheat included Avrora (A),--developed by the Soviet P. P. Lukyanenko--, Koncho x Agr. elongatum (KA), and Weihenstephaner M. (WM.) which are of different origins. Results of hybridological and monosomic analysis indicate that resistance to race 5 of E. graminis tritici is determined by a considerable number of genes with unequal force and direction of action (Tables 1 and 2). Resistance of the varieties is of a different nature and origin and is controlled by the action of a varying number of genetic factors localized in different chromosomes of the individual varieties which differ from Pm-genes identified to the present. Tables 2; references 9: 1 Russian, 6 Western.

Tabulation of findings: B. V. Bochev, and G. D. Ganeva, Doklady Bolgarskoy AN, Vol 29 No 11, 1976

Table 1

Character of the inheritance of the resistance to race 5 of *E. graminis tritici* in $F_1$ and segregation in $F_2$ hybrid populations

| Hybrids | Type of reaction in $F_1$ | Number of $F_2$ plants | |
|---|---|---|---|
| | | Resistant | Susceptible |
| *Avrora* × *Weihenstephaner* $M_1$ | 0 | 56 | 79 |
| *Weihenstephaner* $M_1$ × *Avrora* | 0 | 100 | 97 |
| *Avrora* × *Koncho* × *Arg. elougatum* | 4 | 21 | 100 |
| *Koncho* × *Agr. elongatum* × *Avrora* | 4 | 19 | 9 |
| *Koncho* × *Agr. elongatum* × *Weihenstephaner* $M_1$ | 0 | 87 | 79 |
| *Chinese Spring* × *Avrora* | 4 | 110 | 300 |
| *Chinese Spring* × *Koncho* × *Agr. elohgatum* | 4 | 31 | 98 |
| *Chinese Spring* × *Weihenstephaner* $M_1$ | 0 | 112 | 40 |
| *Avrora* | 1—2 | | |
| *Koncho* × *Agr. elongatum* | 0 | | |
| *Weihenstephaner* $M_1$ | 0 | | |
| *Chinese Spring* | 4 | | |

## Table 2

Segregation for resistance to race 5 of *E. graminis tritici* in $F_2$ population

| Monosomic lines | mono CS × A | | | mono CS × KA | | | mono CS × WM$_1$ | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of $F_2$ plants | | $X^2$ | R | S | $X^2$ | R | S | $X^2$ |
| | Resistant | Susceptible | | | | | | | |
| 1A | 90 | 64 | 94.75 | 75 | 246 | 0.460 | 35 | 14 | 1.0198 |
| 1B | 26 | 68 | 0.3547 | 102 | 294 | 0.121 | | — | — |
| 1D | 84 | 216 | 1.441 | 21 | 115 | −16.142 | 31 | 11 | 0.0317 |
| 2A | 12 | 44 | 0.381 | 91 | 195 | 0.1054 | 216 | 105 | −14.7042 |
| 2B | 40 | 112 | 0.140 | 21 | 58 | + 6.389 | 89 | 31 | 0.344 |
| 2D | 10 | 42 | 0.923 | 27 | 79 | 0.0125 | | — | — |
| 3A | 61 | 148 | 1.953 | 40 | 155 | — 5.216 | | — | — |
| 3B | 19 | 56 | 0.0044 | | | | | | |
| 3D | 10 | 44 | 1.209 | 38 | 127 | 0.341 | | — | — |
| 4A | 21 | 68 | 0.134 | 44 | 114 | 9.761 | 162 | 72 | — 4.153 |
| 4B | 88 | 211 | 3.132 | 83 | 263 | 0.148 | 669 | 36 | — 5.13 |
| 4D | 30 | 87 | 0.254 | 119 | 324 | 0.818 | 150 | 83 | −14.0315 |
| 5A | 28 | 81 | 0.0223 | 70 | 198 | 0.778 | 128 | 43 | 0.0019 |
| 5B | 43 | 131 | 0.0076 | 63 | 129 | — 6.24 | 50 | 3 | +10.606 |
| 5D | 31 | 92 | 0.0027 | 20 | 70 | 0.371 | 57 | 30 | — 4.16 |
| 6A | 14 | 36 | 0.21 | 44 | 126 | 0 547 | 32 | 15 | 1.199 |
| 6B | 31 | 91 | 0.010 | 39 | 106 | 0.278 | 51 | 15 | 0.181 |
| 6D | 69 | 215 | 0.0750 | 54 | 118 | 3.748 | — | — | — |
| 7A | 36 | 119 | 0.260 | 74 | 73 | +50.336 | 166 | 61 | 0.4240 |
| 7B | 53 | 153 | 0.058 | 82 | 95 | +42.939 | 113 | 37 | 0.0078 |
| 7D | 36 | 104 | 0.0381 | 38 | 134 | 0.775 | 154 | 79 | — 9.855 |
| Euploid | 110 | 300 | 0.731 | 31 | 98 | 0.209 | 112 | 40 | 0.140 |

USSR UDC 631.466:632.25

THE PHYTOTOXICITY OF GENUS FUSARIUM MOLDS ON WINTER WHEAT IN MOLDAVIA

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR in Russian No 6, 1976 pp 41-46

BRYNZA, A. I., LAZU, M. N., POPUSHOY, I. S., and GRINBERG, SH. M.

[Abstract] In connection with the widespread occurrence of root rot in Moldavia the phytotoxicity of genus Fusarium molds isolated from winter wheat in the tillering stage was studied. The toxicity of filtered mold culture liquid on seeds of Kavkaz winter wheat and Krasnodar corn was determined by effect on growth, with 30% growth inhibition indicating toxicity. Different Fusarium strains had different effects on the length of corn and wheat shoots, with some having maximum inhibition in 11-day cultures and others in 14-day cultures. Different strains of the same species differed in phytotoxicity. Fusarium metabolic products had greater effect on corn than on wheat. This work is the first step in a project to select active toxin producers and develop effective measures to combat them. Tables 2; references 19: 16 Russian, 3 Western.

USSR UDC 633.154.2.065:577.154.35.07

CONDITIONS FOR THE ISOLATION OF PECTOLYTIC ENZYMES FROM RHIZOPUS ARRHIZUS FISCHER MOLD

Kishinev IZVESTIYA AKADEMII NAUK MOLDOVSKOY SSR in Russian No 6, 1976 pp 51-54

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

[Abstract] The optimum precipitating agent and conditions for the isolation of pectolytic enzymes from Rhizupus arrhizus Fischer were determined. The greatest yield of active pectolytic enzymes and exopolygalacturonase was obtained with ammonium sulfate. However the precipitate is difficult to dry, contains a large amount of salt and dissolves in water with difficulty. Ethanol gave a better yield than acetone, forming a white, soluble precipitate, and was therefore studied further. It was found that a temperature of 1 to 5°C and pH of 3 gave optimum yields, while the length of contact between the ethanol and the filtered culture liquid from 0.5 hrs to 24 hours had no effect. A concentration of 78-82% ethanol gave the best results. Tables 5; references 6 (Russian).

USSR UDC 633.11:632.111.53

VERNALIZATION AND DEVELOPMENT OF FROST-RESISTANCE IN WINTER WHEAT PLANTS OF DIFFERENT AGE

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 6, Nov/Dec 76 signed to press 11 Jun 75 pp 873-878

BONDARENKO, V. I., and KHMARA, V. V., All-Union Scientific Research Corn Institute, Dnepropetrovsk

[Abstract] Periods for sowing winter wheat in the inadequately wet Ukrainian steppe zone are still lengthy and usually last about one month, sometimes longer. This leads to significant differences in frost hardiness, in degrees of organogenesis, and, mainly, in the ability to withstand winter misfortunes, particularly, low temperatures. The authors found that completion of vernalization did not influence frost-resistance of the winter wheat. Resistance of the plants to cold is directly dependent on average daily temperatures in the period of wintering and reaches its maximum at the time of prolonged cooling, usually in January or the first half of February. The reason for the poor frost-resistance of the early winter periods of planting is the extended development of the plants under conditions of raised temperatures which causes their accelerated aging and loss of capacity for a hardening process. Figure 1; tables 4; references 16 (Russian).

USSR UDC 581.2

ACTIVITY OF ENZYMES IN INFECTED RYE PLANTS DIFFERING IN DEGREE OF RESISTANCE TO SNOW MOLD

Minsk VESTSI AKADEMII NAVUK BSSR, SERIYA BIALAGICHNYKH NAVUK in Belorussian No 6, 1976 pp 22-26

SEROVA, Z. YA., and GES', D. K., Institute of Experimental Botany imeni V. F. Kuprevich, Academy of Sciences BelSSR

[Abstract] The authors review at length the Soviet literature on the function of enzymes in plant resistance to infection. The peroxidase function appears to be catalysis of reactions which produce substances toxic to the pathogen. Catalase participates in the general defense of the plant host against invasion of a pathogen; V. I. Runov notes that the extent of fusarium infection in plants is a function of plant catalase activity, and that the latter could be used to diagnose wilt disease prior to its manifestation. Dehydrogenases provide a definite level of activity in electron transfer; deviations in dehydrogenase activity upon invasion of a pathogen indicate changes in the plant's respiratory efficiency. The authors contribute their own study of enzyme activity in rye plants infected with F. nivale. In BelSSR the fusarium species cause the extremely damaging snow mold disease which results in death of cereal seedlings. They report profound changes in the activity of the cited enzymes, manifested in an

increase in activity of peroxidase and dehydrogenase and a decrease in catalase activity. Tables 2; references 15: 13 Russian, 2 Western.

USSR UDC 631.55+632.112-634.0.26

FOREST PROTECTIVE BELTS AND YIELDS DURING DROUGHT

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 12, Dec 76 pp 82-90

MILOSERDOV, N. M., doctor of agricultural sciences, Prisivaskaya Agroforestry Reclamation Experimental Station (ALOS) Ukrainian Scientific Research Institute of Forestry; ANTONYUK, candidate of agricultural sciences, Crimea State Oblast Agricultural Experimental Station

[Text-English language abstract supplied by authors] In droughty years protective forest belts decrease the velocity of wind, unproductive loss of moisture, and increase the specific moisture content of air in interbelt fields which results in significant decrease of the negative effect of dry winds. According to the data of studies, carried out on farms of the South-East of the Ukraine during droughty years (1971-1972, 1974-1976), the additional yield of winter wheat protected with windpermeable belts averaged 3.5 centners per hectare (16%), that of spring barley-2.5 centners per hectare (17%) as compared with unprotected fields. Figures 3; tables 5; references 7 (Russian).

USSR UDC 551.509

PREDICTION OF ANOMALOUS WEATHER

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 12, Dec 76 pp 98-101

MARKOV, G. V., candidate of technical sciences, and PASTORS, YE. A., All-Union Scientific Research Institute of Electrification of Agriculture (VIESKh)

[Abstract] The authors indicate the difficulty in prediction of weather except for inprecisely defined periods. They suggest that insignificant variations in the amount of solar energy reaching the earth can be the cause of abnormal weather phenomena; that is, if the total energy received from the sun determines the buildup of earth's temperature, disruption of the energy penetrating must be the cause of deviations in weather. As support for this they recall that the winter of 1941-42 in the European USSR

was very severe; in September, 1941, a solar eclipse had occurred over this area. The winter was cold in the Urals and in Central Asia in 1968/69 after an eclipse there in October 1968; the summer of 1972 was cold in Siberia after eclipses there in February 1971 and June 1972. Spring-summer eclipses possibly lead to cooling of the earth and the atmosphere and profuse precipitation. After the 29 April 1976 eclipse, increased precipitation was seen in southern and central European USSR, in May and June. This phenomenon may help to predict bad weather insofar as eclipses recur at the same place--for example after 54.1 years--and it is reasonable to anticipate a repetition of the weather scene. In 1924, in the Ukraine, Crimea, Don and Volga basins, and in the central chernozem regions, a serious drought occurred; analogous conditions must be expected in 1978 (i.e., 54 years later). Analogous favorable weather in 1919 and 1973, and unfavorable weather in 1921 and 1974/74, are cited for these areas. The authors caution that further analysis of the suggested agreement is required for more reliable long-term weather prognosis. No references.

USSR UDC 633.11:581.154

GENETIC ANALYSIS OF THE BALL-SHAPED SYMPTOM IN SOFT WHEAT MUTANTS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 6, Nov/Dec 76 signed to press 15 Dec 75 pp 937-938

MOROZOVA, I. S., ZOZ, N. N., and PANINA, YE. B., Institute of Chemical Physics, Academy of Sciences USSR, Moscow

[Abstract] In the Triticum L. family, only soft wheat T. sphaerococcum Perc. has a ball-type grain form. The others will yield ball-shaped mutants by induced mutagenesis. The spherococcoid complex usually has dominant or semi-dominant inheritance, and it is of practical interest to produce soft wheat with a ball-shaped grain. The authors produced ball-shaped mutants of Belotserkovskaya 198 by processing of the seeds with N-nitroso-N-ethylurea; in $M_5$-$M_7$ they carried out reciprocal hybridization of the mutants with the initial cultivar and with each other. Four constant lines, with ball-shaped grain, were obtained. The ball-shaped symptom was controlled by one dominant factor. Of these four, line 40 was sent to the All-Union Institute of Plant Growing imeni Vavilov and named Varietas quasilutescens Jakubz et Zoz. Figure 1; table 1; references 3: 2 Russian, 1 Western.

USSR UDC 633.11:632.938+595.768.1

RESISTANCE OF SOFT WHEAT TO LEMA MELANOPUS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 6, Nov/Dec 76 signed to press 12 Apr 76 pp 900-906

GUSLITS, I. S., All-Union Institute of Plant Protection, Leningrad

[Abstract] The author conducted his work in 1974-75 at the Kuban Experimental Station, VIR, testing 24 sorts of winter wheat and 12 sorts of spring wheat--all catalogued by VIR number. Although there was considerable difference in degree, most of the winter wheats were susceptible to Lema melanopus; types of resistance seen were non-preference, antibiosis and tolerance. Spring wheats were more resistant; the resistance of the latter, basically attributable to non-preference, can be assessed by the degree of population density of the pest, and by degree of injury of the plants. It is suggested that Soviet sorts Meridionale 77, Krymskiye mestnyye, and Odesskaya 16, and Columbia (USA), Baragan 9 (Rumania), and K-201 (Hungary), be used for further selection of winter wheat for resistance. Tables 4; references 16: 7 Russian, 9 Western.

USSR UDC 631.6

USE OF MAGNETIC FIELDS FOR DESALINIZATION OF LANDS WITH LEACHING

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 12, Dec 76 pp 75-78

BONDARENKO, N. F., doctor of technical sciences, ROKHINSON, E. YE., and GAK, YE. Z., candidates of physical mathematical sciences, Agrophysical Scientific Research Institute, and BOGOSLOVSKIY, B. V., "KOTLOOCHISTKA" PLANT

[Text-English language abstract supplied by authors] The authors carried out field investigation of the method of desalinization of soils by washing it with mineralized water which had passed through a magnetic apparatus. These experiments on soils of the chloride-sulfate salinization in the Golodnaya steppe of the Tadzhik SSR showed that this procedure is promising. Irrigation water, passed through a magnetic apparatus, washed out twice as much salts as compared with control fields. Figure 1; table 1; references 7 (Russian).

USSR

UDC 621.375.826+63

USE OF LASERS IN RESEARCH AND PRODUCTION

Moscow VESTNIK SEL-SKOKHOZYAYSTVENNOY NAUKI in Russian No 12, Dec 76 pp 137-138

Unsigned

[Abstract] A combined session was convened in Kishinev of the Council of All-Union Academy of Agricultural Sciences imeni Lenin (VASKhNIL) with the Working Group, Academy Sciences USSR, on the Scientific Foundation of Agriculture. Participants included scientists from the Agrophysical Institute, Moscow State University, Kishinev Agricultural Institute (AI), Institute of Physiology and Biochemistry of Plants, Academy of Sciences Moldavian SSR, Institute of Plant Physiology, AS-USSR, Institute of Applied Physics (IAP) AS-Moldavian SSR, Institute of Viniculture, Cultivation and Wine Making of the Ministry of Agriculture, and members of the Council on Photoenergy of Plants in the Presidium of the US-Moldavian SSR. Prof. V. N. Lysikov described research on lasers in agriculture underway at the Kishinev AI, and the department of genetics, AS-Moldavian SSR. A. N. Balashov, senior scientist of the IAP, AS-Moldavian SSR, described the LOBO-1 and LOBO-2, instruments developed by the IAP and the Ministry of Electronic Industry for processing seeds and plants with laser radiation. New corm forms which exceeded standard forms in productivity have been developed, under V. N. Lysikov, using the OKG-12 laser instrument. Moldavia is credited with good work on the effect of physical factors on plants. A second session of the Council was held in Tbilisi; participants were from the Agrophysical Institute, and the Gruzinian Scientific Research Institute of Hydrotechnology and Reclamation. Academician of the VASKhNIL T. S. YE. Mirtskhulav discussed use of lasers in hydrology and reclamation; D. V. Chikvaidze methods of use of lasers in this field. The institute was credited with use of lasers in study of deformation in building materials, in measurement of speeds of currents, and in holography. No references.

USSR UDC 631.111:631.524.86

PROCESS OF FORMATION OF BROWN RUST RESISTANCE OF HYBRID WINTER WHEATS UNDER IRRIGATION CONDITIONS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 6, Nov/Dec 76 signed to press 13 Nov 75 pp 892-895

ORLYUK, A. P., and BAZALIY, V. V., Ukrainian Scientific Research Institute of Irrigation Agriculture, Kherson

[Abstract] The authors state that creation of cultivars with high resistance to fungal diseases is one of the most important tasks of selection. In their selective work they examined the process of formation of resistance to brown rust in parent and hybrids of highly-resistant, medium-resistant, and susceptible sorts and forms of wheat under irrigation; they examined 200-300 plants in all. Under these conditions inheritance of resistance depended on the genetic properties of the starting components of the hybridization. Resistance dominated in those hybrids produced with participation of highly-resistant parent forms. In $F_2$ a larger number of immune and weakly affected types were formed in those combinations where, in $F_1$, resistance dominated, or they occupied an intermediate position with a tendency toward the better parent component. It was found that, under irrigation, in the creation of short-stem sorts, resistant to brown rust, preference had to be given to early-maturing biotypes which are affected by the disease much weaker than the late-maturing forms. Tables 3; references 10 (Russian).

USSR UDC 633.111.1:631.524.1

VARIABILITY AND HERITABILITY OF ESSENTIAL AMINO ACIDS IN SPRING SOFT WHEAT HYBRIDS

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 11 No 6, Nov/Dec 76 signed to press 26 Nov 75 pp 868-872

BEBYAKIN, V. M., KRUPNOV, V. A., MARUSHEV, A. I., and MATVEYEVA, N. F., Scientific Research Institute of Agriculture of the Southeast, Saratov

[Text-English language abstract supplied by authors] The percentage of lysine in the total protein of grain of separate plants varies to a considerable degree (v = 8.4-18.6%) while the content of tryptophan is more stable (v = 5.8-9.6%). The value of the variability of the concentration of lysine in segregating generations ($F_2$-$F_3$) was higher than the level of the variability of this property in parental varieties. The authors found the transgressive nature of the segregation in relation to lysine and tryptophan content in $F_2$ and $F_3$ in the Saratovskaya 36XKrasnaya Zvezda hybrid. The coefficient of hereditability of the values of lysine and tryptophan content in protein ($H^2$) in $F_2$ averaged 0.42-0.58 and 0.20 respectively. Figure 1; tables 5; references 5: 2 Russian, 1 Czech, 2 Western.

USSR UDC 636.084

INCREASE IN CONCLUSIVENESS OF TESTS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 12, Dec 76 pp 101-108

ARANDI, P. YA., doctor of agricultural sciences

[Abstract] Study of the effect of a new ration, fodder, or new feed additive on the productivity of animals demands appropriate attention to other factors--maintenance conditions of the animals, inherited characteristics, age, live mass, and other correlated associations. The author has used covariation analysis to increase the accuracy and usefulness of an experiment in animal nutrition. The method and value of calculation of an independent variable is shown through a model experiment with four groups of young cows, where study was made of a different physical form of a standard diet on yeild of 4% milk. Processing data on mean daily milk yields at an equivalent period of the test is attractive because it decreases experimental error by a factor of 1.5. It was shown that combination of a granulated feed-mix with briskets in the cows' ration leads to a reliable decrease in the milk yield. The effectiveness and method of use of two independent variables is presented by an example of industrial feeding of young cattle, which got corn silage or granules prepared from whole corn (with or without urea in both feeds). Other independent variables were mean daily weight gain over an equivalent period and use of dried granules or silage in the main period of the test. Greater weight gains occurred in those groups which got granulated corn, not because of the granules form, but because they ate more of it. Tables 3; references 2.

USSR

THE INTERDEPENDENCY OF THE ACTION OF 2,4-D WITH SULFHYDRYL GROUPS OF PLANT MITOCONDRIAL PROTEIN

Minsk DOKLADY AKADEMII NAUK BSSR in Russian Vol 20 No 12, Dec 76 signed to press 3 May 76 pp 1120-1123

DEYEVA, V. P., and SHELEG, Z. I., Institute for Experimental Botany, imeni V. F. Kuprevich, Academy of Sciences BSSR

[Abstract] A study was made of the influence of 2,4-D on the content of sulfhydryl groups in lupine (I), intact mitocondria (II), easily soluble (III) and difficultly soluble (IV) proteins of these organelles, as well as the proteins of the soluble fraction of the cell (V). It was found that the herbicide (at $3 \cdot 10^{-6}$M) decreased the quantity of thiols in I-V, but the degree of reduction and the time of development of changes depended on the type of protein to which the SH group was bonded and the stability of the variety of plant to the preparation. The greatest changes were experienced by the SH group of IV, a sharp reduction in their content after 24 hr following treatment being strengthened by an increase in exposure. The

quantity of thiols in III and V decreased after 6 hours' exposure to 2,4-D by an average of 20%, remaining at approximately the same level for the remainder of the experiment. It is assumed that 2,4-D causes blocking of plant protein sulfhydryl groups. This clear one-way effect in all of the substrates studied appears in the very first hours after treatment, long before visible changes in plant processes have occurred. Figures 2, table 1; references 16: 12 Russian, 4 Western.

USSR UDC 632.4:582.285.22:633.11

POSSIBLE LOSSES OF WINTER WHEAT YIELD DUE TO YELLOW RUST (PUCCINIA STRIIFORMIS WEST.)

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 6, 1976 signed to press 28 Apr 76 pp 509-510

KAYDASH, A. S., BESSMEL'TSEV, V. I., and DOBRYANSKAYA, M. V.

[Abstract] Yellow rust damage to wheat varies widely from year to year, depending on the presence of susceptible strains, aggressive races and favorable conditions in the environment for the development of the disease. The most effective means of control of yellow rust is the development and use of resistant strains, which may, however, become susceptible. Field experiments have shown that yellow rust damages wheat throughout the various stages of vegetation, the degree of damage varying not only with individual strain resistance, but also with environmental conditions, cool temperatures and frequent precipitation or dew favoring development of the disease. Based on analysis of over 100 cases of the disease, the authors have composed a table presenting data on possible yield losses as functions of intensity of damage in the various stages of development of the plants from sprouting to milky maturity of the grain. Table 1; references 6: 3 Russian, 3 Western.

USSR UDC 58.00:631.427.2:632.4:635.21

METHOD OF DETERMINATION OF THE SEASONAL DYNAMICS OF SOIL INFESTATION BY CONIDIA OF THE POTATO LATE BLIGHT PATHOGEN

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 6, 1976 signed to press 15 Jul 74 pp 514-516

BOGUSLAVSKAYA, N. V., GUREVICH, B. I., and FILIPPOV, A. V.

[Abstract] The contradictory nature of data in the literature concerning the seasonal dynamics of the soil infestation by the potato late blight pathogen led the authors to perform experiments by the method of Lacey, slightly modified, involving infestation of the soil with Ph. infestans (from 2 to 3,855 viable conidia per $cm^3$ of soil) and application of the soil samples to pieces of potato, which were then held in a moist chamber at 20 C for 24 hours, then cut into 8 equal parts, held for 7 days, and examined for blight. 21 specimens were studied in all. Analysis of the data was used to produce a regression equation (1). The maximum concentration which can be determined by this method is 200 conidia/$cm^3$ of soil. At higher concentrations, 100% of the potato pieces are damaged. To evaluate higher rates of infestation, leaf sections are inoculated, placed for 24 hours in a moist chamber at 20 C, then the soil is washed off and the leaves are placed into flasks containing water. After 3-4 days, necroses are counted and the area of inoculated sections determined. The maximum sensitivity of this method is 2000 conidia/$cm^3$. This method was also used to produce a regression equation (2). Field testing showed early development of the pathogens in the soil of the test areas. Table 1; references 7 (Western).

USSR UDC 621.466.1:632.4:633.1

SOIL INFECTION WITH COMMON CEREAL ROOT ROT

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 6, 1976 signed to press 1 Apr 76 pp 491-496

BENKEN, A. A., and KHATSKEVICH, L. K., All-Union Institute for Plant Protection, Leningrad

[Abstract] Common or Helminthosporium-Fusarium root rot can be caused by several pathogens. The reason for the epiphytotic development of common root rot is progressive contamination of the soil. A second important prerequisite for strong development of the disease consists in factors which weaken the plants--exhaustion of the soil, unstable or unfavorable moistening, severe temperature changes, etc. The conidium H. sativum is the primary source of soil infection of common root rot in wheat and grain regions of Siberia. The conidium of the fungus has no natural quiescent

period, but can be retained in the soil in a state of forced quiescence for long periods of time under the influence of fungistatics and other factors suppressing the germination process. In particular, the conidium survives for long periods of time at low temperatures, or in dry soil. Under favorable conditions of moisture and temperature, the conservation time of the conidium in the soil is greatly reduced. Alternate wetting and drying are most unfavorable for survival of the conidium. Fusarium species, included in the pathogenic complex, are more or less sensitive to fungi-statis. The result is suppression of germination of macroconidia and morphologic changes in them: death of marginal cells in F. culmorum and F. avenaceum, disappearance of barriers in F. solani, germination with the formation of chlamydospores. Figure 1; tables 5; references 22: 14 Russian, 8 Western.

USSR UDC 58.095:632.4:633.1:582.2.88.4

MEDIUM FOR MASSIVE MULTIPLICATION OF THE PATHOGENS OF COMMON ROOT ROT OF CEREALS

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 10 No 6, 1976 signed to press 1 Mar 76 pp 508-509

ZRAZHEVSKAYA, T. G., Ukrainian Scientific Research Institute for Plant Protection, Kiev

[Abstract] Massive multiplication of pathogens of common root rot from fungus cultures of the general Fusarium and Helminthosporium sativum Pamm., King et Bakke to produce the pathogens for experimental purposes makes wide use of such nutrient media as wheat, barley, oats, crushed corn, hay or mixtures of these crops. Experiments have shown significant advantages of sand-corn-flour nutrient media over the more traditional media just described. The author modified the improved medium slightly to avoid the problem of clumping, utilizing smaller quantities of flour and partially replacing corn flour with wheat flour and adding 5% perlite to improve texture. References 5: 4 Russian, 1 Western.

USSR UDC 581.4:575.17

A STUDY OF CORRELATIONS BETWEEN THE MORPHOLOGICAL SIGNS OF DIPLOID AND OF TETRAPLOID FORMS OF WINTER WHEAT, AND THEIR LODGING RESISTANCE

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 25 Mar 76 pp 146-154

GLADYSHEVA, N. M., ROSTOVA, N. S., and SMIRNOV, V. G.

[Abstract] The fight against lodging in grain crops is one of the most important efforts in the intensification of agriculture. It is known that resistance to lodging depends both on the conditions of growth and on the genotypic features of the plants. However, despite the large number of researchers working in this area, there remain a good many gaps in our notions of just how a species should be constituted in order to combine high productivity with resistance to lodging. Studying 22 varieties and forms of winter wheat, the authors applied the method of factor analysis in order to estimate a system of interpopulation correlations between the morphological signs present, and also to estimate the lodging resistance in diploid and tetraploid forms of winter wheat showing different types of growth. Two groups of signs which are most significant in lodging resistance were distinguished. In addition to those already familiar (thickness of stalk, weight of root), other signs also were found to play a significant role (relative weight of the two lower internodes and of the ear). Factor analysis made it possible to distinguish the complex character of certain relations. Comparison of the forms studied on the basis of values of complex indices (factors) enabled the researchers to distinguish clearly the diploid and tetraploid forms which had the best indices for both complexes of signs which are significant for resistance to lodging. Those forms are promising for future selection activity in developing winter wheat which is so resistant. Figure 1; tables 3; references 37: 33 Russian, 4 Western.

USSR UDC 582.24(28)

A SURVEY OF SEPTORIA SACC. SPECIES IN LENINGRAD OBLAST WHICH ARE PARASITES ON GRAMINEAE

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 15 Dec 75 pp 82-89

VAN TKHAN', NGUYEN

[Abstract] These fungi, being parasitic on both wild and cultivated grains and other useful plants, are of considerable economic importance, and their detection and identification is important in the protection of agricultural crops. According to published data, they damage and sometimes destroy a

number of varieties of spring and winter wheat. The author describes 21 species of Septoria, two of these not hitherto observed in the Leningrad district. Complete descriptions are given, both of the parasites and of their spores, in the form of extensive tables. Figure 1; table 1; references 17: 10 Russian, 7 Western.

USSR UDC 613.281:612.398.6

# SOME METHODOLOGICAL ASPECTS IN FORMULATION OF A BIOLOGICAL EXPERIMENT TO STUDY ANABOLIC PROPERTIES OF NEW TYPES OF PROTEIN

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 10 Jun 76 pp 60-64

PETROVSKIY, K. S., SUKHANOV, V. P., and KERIMOVA, M. G., Moscow

[Abstract] The authors stress that study of the biological value of basic nutrients and complexes of them, including protein substances gotten from unusual sources, has acquired some urgency in recent years. In this report, the authors, who are engaged in nutritional biochemical research, describe well-known fundamentals for setting up and performance of a study of biological value of food products in animal experiments. They do not recommend one universal method, and indicate that concrete details will be governed by the type of the unusual product, not named, and will follow procedures extensively described in Soviet and foreign literature. Figures 2; references 6 (Russian).

USSR

ELECTRODE TO MEASURE BIOPOTENTIALS OF ACUPUNCTURE POINTS

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 11, Nov 76 p 90

YERMUKHAMBETOV, T. K., Department of Propedeutics of Internal Diseases, Alma-Ata Medical Institute

[Abstract] A 1.6-1.9 mm silvered rod-electrode was devised by the author to measure biopotentials of acupuncture points; the electrode has a moistening chamber which supplies physiological solution from a syringe to assure constant contact with the skin. The tip of the electrode is placed on any body point and the electric potential is recorded by an amplifier. The author states that he has measured biopotentials of the active points of the skin in hypertension and bronchial asthma patients and also in location of active acupuncture points for directing the action of laser radiation; the electrode permits--with minimum error--determination of the true sites of acupuncture points, an important guide for therapy with needles, cauterization, laser radiation, and the like. No references.

USSR

UDC 617.713-002.44-003.9:612.014.45

EFFECT OF ULTRASOUND ON HISTOLOGICAL AND HISTOCHEMICAL CHANGES DURING THE PROCESS OF HEALING OF CORNEAL SUPPURATIVE ULCERS

Odessa OFTAL'MOLOGICHESKIY ZHURNAL in Russian Vol 31 No 7, 1976 pp 533-535

GORALCHUK, M. V., physician, and KOSHIK, T. F., docent, Department of Eye Diseases and Pathological Anatomy, Ivano-Frakovsk Medical Institute

[Abstract] Earlier studies by the authors have examined the course of experimental treatment of ulcers with phonophoresis, ultrasound, ultrasound-electrophoresis, and electrophoresis and subconjuctival application of drugs; they saw a positive effect of phonophoresis of penicillin on ulcer healing. The present paper presents comparative data on the use of penicillin phonophoresis on histological and histochemical changes in rabbits during healing of corneal suppurative ulcers. Treatment included: i) exposure to ultrasound (0.3 S/sq cm, 1.625 kHz for 5 min) for 10 seances; ii) phonophoresis with penicilllin solution, 10000 U/ml; iii) ultrasound and electrophoresis; iv) penicillin electrophoresis; v) subconjunctival administration of penicillin, 25 000 U/day, 10 injections per course. After treatment the eyes were enucleated, and the isolated corneas examined histochemically. The penicillin-phonophoresis was most effective, followed by ultrasound, and ultrasound-electrophoresis. The authors conclude that ultrasound does have a positive healing action on suppurative ulcers of the cornea, especially when used in the form of phonophoresis. References 13: 9 Russian, 4 Western.

USSR

KINETICS OF INCREASE AND DECREASE IN MICROWAVE PHOTOCONDUCTIVITY SIGNALS OF CHLORELLA IN RELATION TO THE CONDITION OF THE CULTURE

Moscow BIOFIZIKA in Russian Vol 21 No 6, Nov/Dec 76 signed to press 5 Mar 76 pp 1031-1034

SAMOYLOVA, O. P., SOLOV'YEV, I. S., and BLYUMENFEL'D, L. A., Institute of Chemical Physics, Academy of Sciences USSR, Moscow

[Abstract] Two types of kinetic curves are characteristic of Chlorella cultures: increase after exposure to light (type 1) and decrease in the absence of light (type 2). Several factors affect the microwave photoconductivity signals (MPS), e.g., the time when a specimen is taken during the "light-dark" cultivation cycle, intensity of light, and $CO_2$ concentration. A "dark" culture exhibits type 2 kinetics, whereas type 1 kinetics is usually seen during the first 15-30 minutes of light. At low intensities of light even active cultures produce type 2 MPS, which change to type 1 when the intensity is increased. Removal of $CO_2$ from a culture (e.g., blowing through $CO_2$-free air) invariably results in the appearance of type 2 MPS. The addition of $CO_2$ again elicits type 1 signals. Type 1 MPS can be transformed into type 2 by inactivating a specimen with heat or by incubating a culture before measuring it with an electron transport inhibitor (dichloroethyl urea) or with an exogenous electron donor (sodium ascorbate). Figures 4; references 5: 2 Russian, 3 Western.

USSR

EFFECT OF LONG-WAVE ILLUMINATION ON THE KINETIC CHARACTERISTICS OF MICROWAVE PHOTOCONDUCTIVITY SIGNALS OF CHLORELLA CELLS AND THE EMERSON EFFECT

Moscow BIOFIZIKA in Russian Vol 21 No 6, Nov/Dec 76 signed to press 9 Mar 76 pp 1035-1037

SOLOV'YEV, I. S., SAMOYLOVA, O. P., and BLYUMENFEL'D, L. A., Institute of Chemical Physics, Academy of Sciences USSR, Moscow

[Abstract] Photosynthetically active Chlorella cells produced type 1 and type 2 microwave photoconductivity signals (MPS) when irradiated with fairly intense and weak white light, respectively. Irradiation with light from the distant red region of the spectrum did not elicit MPS regardless of the condition of the culture. However, preliminary irradiation with this light significantly affected the kinetic characteristics of the MPS in response to white light, e.g., it caused the specimens normally producing type 2 signals to produce type 1 signals instead. Irradiation of the algae with a DKSSh-100 lamp or with the LG-38 He-Ne laser, lambda=634 nm invariably

provoked type 2 signals, whereas simultaneous irradiation with both light sources yielded type 1 signals. The Emerson effect was not observed in inactive cultures that yielded type 2 signals even when exposed to intensive white light, and the effect of light at the 2 different wavelengths was strictly additive. Figures 4; references 3: 2 Russian, 1 Western (by Blumenfel'd).

USSR UDC 576.895.421:616.988

# VIROLOGICAL AND SEROLOGICAL SURVEY OF FOCI OF CRIMEAN HEMORRHAGIC FEVER IN SOME OBLASTS OF KAZAKHSTAN

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 11, Nov 76 p 87

KARIMOV, S. K., KIRYUSKCHENKO, T. V., TOGOVAYA, S. G., DROBISHCHENKO, N. I., USEBAYEVA, G. K., GENIS, D. YE., PRIKHOD'KO, YE. G., and MAKHMETOV, M. M., Kazakh Scientific Research Institute of Epidemiology, Microbiology, and Infectious Diseases; Kzyl-Orda Oblast Sanepid Station; Republic Sanepid Station

[Abstract] The authors present data on virological and serological research on discovery of foci of Crimean hemorrhagic fever (CHF) in the southern oblasts of Kazakhstan. Virus studies on 14,071 newborn mice yielded seven CHF strains from the tick Hyalumma asiaticum. Agar diffusion precipitation reaction in 5189 samples of domestic animal blood sera yielded seropositive results in 0.7% of big-horn cattle, 2.8% of short-horn cattle, and 4.1% horses. The most intensive circulation of CHF virus is seen in the arid zone conditions of south Kazakhstan. No references.

USSR/BULGARIA UDC 613.633-07:061.3(103)"1976"

# SECOND MEETING OF SPECIALISTS OF THE SOCIALIST COUNTRIES ON UNIFICATION OF STANDARDS AND METHODS OF MEASURING FIBROGENIC DUSTS (BULGARIA, SOFIA, MAY 1976)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 pp 57-58

VORONTSOVA, YE. I., and TKACHEV, V. V., Moscow

[Abstract] Participants were from Bulgaria, Rumania, Poland, Germany, Czechoslovakia, and the USSR. Reports dealt with the following: i) accumulation, introduction, and retention of dust in the human respiratory tract as a function of its dispersability; ii) current control of dust in industry and basic trends to improve it; iii) development of basic needs for methods and instruments to measure dust content of air; iv) use of various fractionators to create instruments for two-step gravimetry; v) suitability of individual dust counters to control dust contamination of air; vi) comparison of the value of methods to measure fibrogenic components in dust; vii) unification of methods to determine fibrogenic properties of non-toxic kinds of dust, and values of MPL. A third conference is foreseen in 1979. No references.

USSR UDC 613.632.4:613.155.3):621.564

SUBSTANTIATION OF THE MAXIMUM PERMISSIBLE LEVEL OF TERPHENYLS GTF, TFS, AND IPMTF IN THE PRODUCTION AREA ATMOSPHERE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 22 Dec 75 pp 42-44

KHROMENKO, Z. F., Institute of Labor Hygiene and Occupational Diseases, Angarsk

[Abstract] Newly produced heat transfer agents from polyphenyl mixtures (PFS) include hydroterphenyl (GTF), terphenyl mixture (TFS), and isopropyl-metaterphenyl (IPMTF); these are oily, yellowish liquids, insoluble in water, and readily soluble in organic solvents. GTF is a mixture of diphenyl, 15%, and hydrogenated isomers of orthoterphenyl (OTF) and metaterphenyl (MTF), 85%. TFS is a rectified mixture of OTF, 63.3%, MTF, 18.6%, and diphenyl, 15%. IPMTF is an alkylated mixture of isomers of MTF (Chechetkin, et al, 1970). Toxicity was tested in rats by gavage, inhalation, and application on skin and mucous membranes of female rats or mice. The terphenyls (GTF, TFS, and IPMTF) have a polytrophic action; they disrupt the function of the nervous system, liver and kidneys, they alter the composition of the peripheral blood, and cause dystrophic changes in the parenchymatous organs. Workers should be examined medically once a year by an internist, neuropathologist, and dermatologist. The MPL in a production area atmosphere, for GTF, TFS, and IPMTF is 5 $mg/m^3$. Table 2; references 6: 4 Russian, 2 Western.

USSR UDC 612.64.014.46:661.729

STUDY OF THE EFFECT OF TERTIARY BUTYL PEROXIDES ON THE MATERNAL BODY AND FETAL DEVELOPMENT

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 22 Dec 75 pp 46-48

SHEVELEVA, G. A., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Abstract] Hydroperoxides of tertiary butyl (HPTB) are organic peroxides widely used in industries which utilize female labor. Karotich (1975) has established threshold and harmless levels of this compound; Loveless (1955) indicated it could evoke chromosome damage in plant cells. The author reports results of a study of the effect of inhalation by pregnant female rats, from the first to 19th day of pregnancy (4 hrs daily, of concentrations of 226, 24, and 1 $mg/m^3$). The higher concentrations induced increased peripheral blood levels of erythrocytes and a weight decrease; the lower concentration caused only a slight increase of protein in the urine, which

did not exceed the physiological norm. The 226 mg level evoked disturbance of development of the fetuses; these changes were non-specific and occurred along with the total toxic action of HPTB. The 2 mg level did not cause such injury. The authors were reluctant to attribute any hygienic significance to the effect of the 2 mg level. The action of HPTB in fetal development did not indicate a selective embryogenic effect. Tables 2; references 3 (Russian).

USSR UDC 615.917:547.415.1)036.3

EXPERIMENTAL DATA IN THE CHARACTERIZATION OF INITIAL BODILY REACTIONS UNDER THE ACTION OF HEXAMETHYLENEDIAMINE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 25 Feb 75 pp 51-52

TKACHENKO, A. YE., Institute of Labor Hygiene and Occupational Diseases

[Abstract] The author has examined initial bodily effects caused by inhalation of hexamethylenediamine--used in industry as an inhibitor of metal corrosion in a neutral aqueous medium, in the production of polyurethanes, plastic articles, epoxy resins and some paints. Exposure of experimental animals was conducted for 8 days, 4 hr per day, at a level of 1.25 $mg/m^3$. At this level, the animals displayed a decrease in threshold of neuromuscular sensitivity, increase in the amount of leukocytes, disturbance of glycogen-synthesizing function of the liver and excretory capacity of the liver, and changes in the phagocytic activity of the neutrophiles. Under an alcohol load, these reactions appeared earlier in some cases or were more pronounced. Since other tests (by Martinova, 1957; Kulakov, 1965) have revealed some changes in organs and systems, at concentrations of 1 $mg/m^3$, the established MPL, it is suggested that this standard be lowered. Table 1; references 7: 6 Russian, 1 Western.

USSR

UDC 613.6:622.363.44:622.24

COMPARATIVE HYGIENIC CHARACTERIZATION OF WORK CONDITIONS WITH DIFFERENT TECHNOLOGICAL METHODS OF IODINE PRODUCTION FROM DRILLING WATERS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 27 Feb 76 pp 17-19

ZAMCHALOV, A. I., ALEKPEROV, I. I., and YELISUISKAYA, P. V., Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendi-Zade, Sumgait

[Text-English language abstract supplied by authors] Work conditions in extraction of iodine from drilling waters by the carbon-adsorption method (CAM) and aero-desorption (ADM) technological methods are characterized by the action of a complex of adverse factors (iodine vapors in the air and, in individual sections also, chlorine and sulfuric acid). In CAM, non-mechanized processes and manual operations are of hygienic importance. ADM distinguishes itself to advantage by hygienically more favorable work conditions as a result of compounded processes, mechanization of manual operations, hermetic sealing of reactors, and a comparatively low pollution of the atmospheric environment near and around the work places, which makes it prefereable to CAM. Proposals for further improvement of the work conditions have been developed. Table 1; no references.

USSR

CLINICO-ELECTROENCEPHALOGRAPHIC ANALYSIS OF NIGHT SLEEP DISTURBANCES OCCURRING IN SOME FORMS OF OCCUPATIONAL NEUROTOXICOSES

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 31 Oct 75 pp 23-26

ANTONYUZHENKO, V. A., GNESINA, YE. A., and MASHIKHIN, YE. N., Institute of Labor Hygiene and Occupational Diseases, Gorkiy

[Text-English language abstract supplied by authors] Examination covered 18 patients with chronic occupational neurotoxicoses provoked by the action of mercury and narcotic poisons (methylmethacrylate and unsaturated hydrocarbons). A continuous polygraphic investigation of the night sleep was carried out. Objective data were contrasted against anamnestic information and patients' reports after an experimental night. The syndrome of short sleep, characteristic of poor sleepers, based on patients' reports (reduced number of sleep cycles), that of superficial (slight) sleep, distinguished by disorganization of the cyclic structure with reduced total duration of the sleep, the syndrome of poor sleep (intermittent somnolence), typical of which is disorganization of the cyclic structure with a high proportion of wakefulness (prolonged falling asleep, frequent arousals at night), are

described. The first two syndromes were noted to occur following poisoning with narcotics and the third in cases of mercury poisoning. The functional significance of the syndromes identified is discussed. Table 1; references 9: 8 Russian, 1 Western.

USSR UDC 613.63:632.952):612.64.014.46

GENETIC HAZARDS OF FUNGICIDE CINEB DURING ITS PRODUCTION

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 16 Dec 75 pp 26-29

PILINSKAYA, M. A., Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

[Text-English language abstract supplied by author] A cytogenetic examination of a group (24) of workers occupationally exposed to the effects of the fungicide during its production revealed a significant rise both in the total frequency of chromosomal aberrations and in major types of the damage inflicted on the chromosomes in the peripheral blood lymphocytes. The detected cytogenetic effect that bears evidence to the mutagenic activity recorded in producing the cineb concentrations may be considered to be one of the manifestations of its adverse effect on the organism of the operators. To provide for safe handling of cineb and to prevent the development of a possible pathology, at the root of which lies damage of the genetic cellular apparatus, it is necessary that the fungicide content in the air of work premises be kept down to the level of the maximum permissible concentration. Tables 2; references 10: 8 Russian, 2 Western.

USSR UDC 613.62-084+616-057-084).003.1

INCREASE IN ECONOMIC EFFECTIVENESS OF EXPENDITURES FOR PROPHYLAXIS OF CHRONIC OCCUPATIONAL DISEASES IN INDUSTRY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 12 Apr 76 pp 35-37

BUSHEVA, G. A., KATSNEL'SON, B. A., OSINTSEV, V. YA., and SIMAKHINA, P. G., Institute of Labor Hygiene and Occupational Diseases, Sverdlovsk

[Abstract] The authors state that an essential element of the economic effect of hygienic measures in industry is the eradication of losses from worker illness due to any defect in the conditions of labor; this element is

particularly important in the evaluation of the economic effectiveness of outlays for prevention of occupational diseases. Examples quoted are prophylaxis of silicosis in copper mining (Busheva, 1971) and in refractories (Busheva and Katsnel'son, 1974). The present article tabulates increasing losses from 1950-1973 due to the occupational diseases of silicosis (in copper mines and in Dinas brick refractories), fluorosis (in aluminum factories) and vibration (1965-1973, in a foundry). These losses, involving temporary inability to work, or even abandonment of job or production, have risen steadily. Prevention of these losses will be achieved, it is claimed, by expenditures for prophylaxis; decrease in cost of health measures (a probable consequence of growth in productivity of socialist labor) and increase in their hygienic effectiveness (a probable consequence of advanced sanitary technology) will steadily increase the economic effectiveness of the expenditures. Measures to protect labor (especially for health in industry) can be regarded as measures to maintain an effective working force. Table 1; references 3 (Russian).

USSR UDC 613.6:061.3(470.43)"1976"

SCIENTIFIC-PRACTICAL CONFERENCE ON "PROBLEMS OF LABOR HYGIENE, TOXICOLOGY, AND OCCUPATIONAL PATHOLOGY AT THE VOLGA AUTO PLANT IMENI THE FIFTIETH ANNIVERSARY OF THE USSR" (Togliatii, May 1976)

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 pp 58-59

TKACH, A. N., Kuybyshev

[Abstract] This conference was organized by the Kuybyshev Institute of Hygiene together with the Volga Auto Plant, the Kuybyshev Medical Institute, and the Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR. Participants (200) were from 14 Soviet cities, representing scientific hygiene institutes, medical colleges, sanepid-stations, and safety departments. The theme paper, on trends in hygiene research at the Volga plant, was delivered by A. A. Plyasunov, director of the Kuybyshev Institute of Hygiene. A seminar was conducted on the introduction of new GOST (state standards) on "safety requirements and toxic substances," and "safety requirements and atmosphere of work areas." No references.

USSR UDC 616.5-057-02:615.2/.3.011.4

PHYSICO-CHEMICAL PROPERTIES OF SUBSTANCES CAUSING OCCUPATIONAL SKIN AFFECTIONS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 12, Dec 76 signed to press 31 Oct 75 pp 19-22

TANKOV, YU. P., (Barnaul), and ANTON'YEV, A. A., (Moscow), Pedagogical Institute, Central Institute for the Advanced Training of Physicians

[Text-English language abstract supplied by authors] Physico-chemical properties of 4 classes of chemicals, viz., amines, alcohols, alkanes and ethers, are considered. Being eczematogenous agents, amines possess a number of distinctive properties, such as low energy of the dissociation links, enantiomery, enzyme-like activity, easy amenability to oxidation. On gaining access into the tissues, the amines and majority of sensibilizers experience metabolic redox transformations under the effect of the NADP-$H_2$-dependent enzymes, which, possibly, accounts for a poor production of humoral antibodies. Facts testifying to possible metabolic transformations of amines not only in the liver and erythrocytes, but also in the skin, are reported. A suggestion is put forward on an important part played by induction of the NADP-$H_2$-dependent enzymes through chemical stabilizers, a fact that may be of significance in the pathogenesis of dermal hypersensitivity. Table 1; references 26: 17 Russian, 9 Western.

USSR UDC 614.715

INFLUENCE OF EFFLUENT OF A PHOSPHORUS PLANT ON THE SANITARY CONDITION OF THE ENVIRONMENT

Alma-Ata ZDRAVOOKHRANENIYE KAZAKHSTANA in Russian No 11, Nov 76 p 84

ZHAKASHOV, N. ZH., Physician-Sanitary Service of the Kazakh Railroad

[Abstract] Many years work have been devoted by the author to development of measures to decontaminate the environment around a phosphorus plant in southern Kazakhstan. He lists the problems. The intensive area of contamination extends 500-1000 m, the radius of dispersion of the discharge varies from 1500 to 11,000 m depending on production schedules and efficacy of dust-catching equipment. Children living in a 3000 m radius showed reliable decrease in phagocyte activity of leukocytes and increase in bacterial count on the skin. Less pronounced changes were seen in inhabitants of the 4000 m zone. Sewage from the plant increased the mineral content of the air. An increased content of phosphorus and fluorine was found in the soil and vegetation growing in sectors up to 2000 m from the effluent source. No references.

USSR UDC 613.644+613.646)-07:(612.472+612.826.4):622

INFLUENCE OF VIBRATION AND THE HEATED MICROCLIMATE ON SOME INDICES OF NEUROENDOCRINE REGULATION OF FUNCTION IN MINERS

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 30 Dec 75 pp 42-45

VINARIK, E. M., and RATNER, M. V., candidates of medical sciences, Donets Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] The authors feel that inadequate study has been devoted to the combined action on miners of occasional vibration, raised temperature, and humidity upon the functional status of the adrenals and sympathico-adrenal system. The present report examines relevant changes in miners--and in persons not adapted to mines--appearing after a single combined action for 1 hr of local vibration (22 Hz, 5 cm/s), temperatures of 18° or 36°, and 90% humidity. On the basis of excretion of corticosteroids, adrenaline, and noradrenaline, experienced coal miners revealed a heightened readiness of the neuroendocrinal systems to respond protectively to vibration, and this response is somewhat better at higher temperature. They manifest increased functional activity of the adrenal cortex and the sympathico--adrenal system under added load. Some hyporeaction of the sympathetic link of the vegetative nervous system in response to load indicates some weakening of nervous processes. Tables 2; references 12 (Russian).

USSR UDC 613.62:616.1-057:(665.6+662.323

STUDY OF THE PATHOGENESIS OF CARDIOVASCULAR DISEASES AT CHEMICAL INDUSTRIAL ENTERPRISES

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 10 Mar 76 pp 38-42

ALEKPEROV, I. I., professor, and KNABENGOF, V. G., candidate of medical sciences, Azerbaydzhan Scientific Research Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendi-zade, Sumgait

[Abstract] The authors believe that study of the most prevalent diseases of the CV system--hypertension and ischemic disease--has not paid adequate attention to the risk factors in labor conditions and occupational factors. Examination of workers in petroleum and chemical industries have shown that exposure to toxic chemicals produces among others, a non-specific effect manifested in vegeto-vascular dysfunction; introduction of methods of examination should include tests of hemo- and cardiodynamics. To study potential pathologies in the cited industries, the authors have employed dynamic vectocardiography--to reveal the nature of bioelectric processes in the cardiac muscle of exposed workers--and cardiomonitoring--to identify early signs of cardiovascular irregularities. Figures 2; references 9 (Russian).

USSR UDC 615.285.7.065:618.33-007

EVALUATION OF EXPERIMENTAL DATA ON TERATOGENIC PROPERTIES OF THE COMBINED ACTION OF SUBSTANCES ALIEN TO THE BODY

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 15 Dec 75 pp 32-35

SHTENBERG, A. I., professor, and TORCHINSKIY, A. M., candidate of medical sciences, Institute of Nutrition, Academy of Medical Sciences USSR, Moscow

[Abstract] Literature data on combined action of potential teratogenic chemical compounds is limited. The authors report the use of DDT as an adaptogen to modify the teratogenicity and embryotoxic effect of sodium salicylate (SS) benlate, and chloridin (CH). Tabulated results indicate that DDT does alleviate the action of those agents. Preliminary administration of DDT lowered both the teratogenic and embryotoxic action of SS and benlate in doses of 400 and 250 mg/kg respectively. At higher doses of these preparations (600 and 750 mg) only the embryotoxic effect was decreased although the number of fetuses with anomalies in development was unchanged. With CH, results were similar but less pronounced. Effectiveness of the DDT, and of the toxic action of the teratogen, is shown to be a function of doses used. Table 1; references 7: 6 Russian, 1 Western.

USSR UDC 613.155:615.277.4.07:622.1/.4

DEVICE FOR AIR SAMPLING IN DETERMINATION OF CARCINOGENIC SUBSTANCES IN EXPLOSION-HAZARDOUS SHOPS AND SITES

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 22 Dec 75 pp 76-78

GIMADEEV, M. M., and DAUMOV, F. F., candidate of medical sciences, Kazan Medical Institute

[Abstract] Rapid growth in the chemical and petrochemical industry has made it necessary to test pollution with carcinogenic substances by the industry; testing at the installations and sites is complicated because of explosion hazards, due to occasional sparking. Instrumentation must be explosion safe. The authors have devised a safe, transportable air sampler for determination of benz(a)pyrene in explosion-risk areas. The apparatus, which is illustrated in the authors' report, consists of an explosion-safe motor (three-phase asynchronic, type KOM 21-1, power 1.7 kw, 1420 rpm, 380 V), a ventilator, rotameter, intake and exhaust pipes, protective baffle plate (on intake pipe), damper (on exhaust pipe), oil starter, and starting crank. Its dimensions are 175x135x55 cm; weight 85 g. The oil starter (type UL 5802-I 25,500 V, TU-1963) protects from sparking on turning on and off. The device has taken over 300 samples. Figure 1; reference 1 (Russian).

Note: the reference is to Kimina and Polyakova's sampler, Gig. i san., No 8 1961, 49-53, a device the author states to be unsuitable.

USSR UDC 613.644-092.9

DURATION OF AN EXPERIMENT FOR STANDARDIZATION OF COMBINED ACTION OF VIBRATION AND NOISE

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 9 Feb 76 pp 70-73

PARAN'KO, N. M., doctor of medical sciences, Medical Institute, Dnepropetrovsk

[Abstract] The author has found lack of agreement on standardization of methods to identify bodily changes caused by a combination of vibration and sound. He has set up experimental conditions for standard testing, lasting 10, 30, 60, 120 and 180 minutes exposure, and variegated physiological examinations for revealing shifts. The most sensitive indices, which adequately reflect functional effects of combined action of local vibration and noise on experimental subjects (19-28 yrs old), are changes in auditory and vibration sensitivity, and time of response to stimulus of light. One-hour combined vibration/sound is found to be the optimal exposure time for standardization of the cited factors; this exposure standard must be regarded as the functional test with many-hour load. The permissible levels established experimentally for the one-hour exposition should be checked under 2- and 3-hour action, followed by checking them under production conditions. Figure 1; references 3 (Russian).

USSR UDC 613.62:622.276(479.24)

PHYSIOLOGICAL-HYGIENIC EVALUATION OF WORKING CONDITIONS IN UNDERGROUND WELL REPAIR IN AZERBAYDZHAN

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 11, Nov 76 pp 49-52

LANGE, N. YE., Laboratory of Industrial Hygiene, All-Union Scientific Research Institute of Safety Engineering in the Petroleum Industry

[Abstract] A study of the working conditions of a well repair brigade in Azerbaydzhan revealed sanitary-hygienic problems with respect to temperature, wind, air pollution, noise, vibration, inadequate illumination and psycho-physiological factors such as fatigue, visual and auditory analyzer

overload, lack of time, risk, and dirt. Physiological shifts were studied in 42 workers. Energy waste was found to increase during the working shift and week, while changes in the cardiovascular system were adequate to the physical load. Muscular strength was also slightly decreased. Sensory-motor reaction improved, due to adaptation to the complex working conditions. Literature data on the correspondence between sick rate and unfavorable hygienic factors were confirmed. New types of protective clothing, heated cabs, hearing protectors, vibration quenching boots and gloves, and flushing nozzles and hoses are recommended. References 9 (Russian).

USSR UDC 616-0-2.3-084

THE PROPHYLAXIS OF SUPPURATIVE DISEASES UPON SOILING THE HANDS WITH LUBRICATING OIL, SOOT OR COAL DUST

Kiev KLINICHESKAYA KHIRURGIYA in Russian Dec 76 pp 56-57

ZMEYEVA, L. P., ZADOROZHNIY, V. V., and SIZOVA, Chair of Hospital Surgery, Khabarovsk Medical Institute

[Abstract] Chemical substances which will guarantee sterility of the hands for short periods without inflicting skin damage have been the object of much search in the Soviet Union and abroad. F. YU. RACHINSKIY and V. T. SOIPYAN in 1967 synthesized so-called acyl hydroperoxides for this purpose. Research on some 10,000 workers of the Khabarovsk Locomotive Depot and Car Classification station has suggested to the authors the use of a wood-soap mixture for the use in question. Their work showed a reduction in suppurative conditions by a factor of 6-8, and, in addition, such wounds healed rapidly.

USSR UDC 612.833.81

SPECIAL FEATURES OF THE FORMATION OF CONDITIONED MOTOR-FOOD REFLEXES IN DOLPHINS (TURSIOPS TRUNCATUS MONT.)

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 15 Mar 75 pp 104-107

PROTASOV, V. A., STOSMAN, I. M., GRIDINA, YE. I., GRIDIN, V. YU., and CHILINGIRIS, V. I.

[Abstract] The behavior of cetaceans is of interest both from the point of view of comparative physiology and in connection with their hydrolocator apparatus. Research in this area, however, is inadequate in that most work has been conducted with the use of individual animals rather than groups, and in that little has been done in connection with the formation of the special features of the higher neural activity. The authors therefore studied the formation and extinction of motor-food reflexes in 15 dolphin subjects. The rate of formation of these reflexes did not differ from that found in other mammals; however, their distinctive characteristic was their persistance over a period of time. A weak expression of orientation reflexes was found in the case of recently captured wild dolphins. Reflexes were formed more quickly in the case of the dolphins held in captivity for some time. References 11: 10 Russian, 1 Western.

USSR UDC 576.851.1.095

PERIPHERAL METABOLISM OF ISOMERIC XYLENES BY A PSEUDOMONAS AERUGINOSA COLONY

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 22 Mar 76 pp 951-954

SKRYABIN, G. K., GANBAROV, KH. G., GOLOVLEVA, L. A., CHERVIN, I. I., ADANIN, V. M., NEFEDOVA, M. YU. and ISMAILOV, N. M., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

[Russian abstract provided by the source]

[Text] The term "peripheral metabolism" denotes typical processes of microbiological transformation where the products of reaction are not included in further metabolism. An investigation was made of microbiological oxidation of xylenes by a culture of Pseudomonas aeruginosa, strain 7 that thrives on m-xylene, grows poorly on p-xylene, and does not grown on o-xylene, but partially oxidizes it. The paths of primary enzymatic oxidation of the xylenes by this culture are determined. It is shown that oxidation of m-xylene proceeds by a previously described path, but that the resultant methyl salicylic acid does not accumulate in the medium, being converted to 3-methylcatechol. It is found that splitting of the aromatic ring takes the meta path. The authors are the first to demonstrate the possibility of oxidation of o-xylene to ortho-cresotic acid. References 11: 2 Russian, 9 Western.

USSR UDC 582.282.23.095

TRANSITION STATE OF A CHEMOSTATIC CULTURE OF CANDIDA UTILIS AFTER SHOCK BY LOW pH OF THE MEDIUM FOR ONE GENERATION

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 1 Jul 76 pp 1005-1011

RABOTNOVA, I. L., LIROVA, S. A., RIZENBERG, D., SHUL'GOVSKAYA, YE. M., IBRAGIMOVA, S. I., and KHOVRYCHEV, M. P., Institute of Microbiology, Academy of Sciences USSR

[Russian abstract provided by the source]

[Text] When Candida utilis BKM Y-1668 is grown under chemostat conditions with D equal to 0.1 $hr^{-1}$ at the glycerol limit, transition states are observed after shock by an extreme pH of 2.25. A reduction taking the form of damped oscillations is seen in the optical density of the cells, the amount of dry biomass, protein, respiratory activity, content of ATP and activity of ATP-ase. Qualitative changes in respiratory activity are observed, oxygen absorption that is not inhibited by cyanide occurs. The consumption

of glycerol and phosphorus for vital activities increases. The resultant data show that an abrupt change in pH causes profound changes in the metabolism of yeast cells. Figures 5; references 15: 6 Russian, 9 Western.

USSR UDC 576.347:582.282.23.095.383

COMPARATIVE STUDY OF MITOCHONDRIA OF TORULOPSIS CANDIDA YEASTS GROWN ON GLUCOSE AND ON HEXADECANE

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 3 Mar 76 pp 1028-1034

IL'CHENKO, A. P., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

[Russian abstract provided by the source]

[Text] A comparative study is done on the oxidative activity of mitochondria of the yeast organism Torulopsis candida grown on glucose and on n-alkanes (hexadecane). The investigation covers the oxidation of principal intermediate products of splitting of glucose and n-alkanes, as well as metabolites of the tricarboxylic acid cycle. An inhibitory analysis is done on the electron transport chain. The results show that there are no fundamental differences between the mitochondria of "glucose" and "hexadecane" cells with regard to functioning (including intensity of functioning) of the tricarboxylic acid cycle and the electron transport chain. At the same time, the mitochondria of "hexadecane" cells have the following distinguishing features as compared with those of "glucose" cells" 1) a sharp increase in the activity of enzyme systems that take part in oxidation of intermediate and higher alcohols and aldehydes; 2) the activity of systems of oxidation of higher fatty acids is somewhat (but not strongly) increased; 3) at the same time there is considerable weakening of the capacity for oxidation of exogenous NAD·H and almost total cessation of oxidative activity with respect to NADP·H. Tables 3; references 17: 4 Russian, 13 Western.

USSR UDC 576.8.095.18:615.779.90

THE SIGNIFICANCE THAT STRUCTURAL ELEMENTS OF THE CHLORTETRACYCLINE MOLECULE HAVE FOR INDUCING BACTERIAL RESISTANCE TO CTC

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 4 Feb 76 pp 1049-1055

MYL'NIKOVA, S. I., and PLAKUNOV, V. K., Moscow State University imeni M. V. Lomonosov, Biology Faculty, Chair of Microbiology

[Russian abstract provided by the source]

[Text] Investigated strains of Staphylococcus aureus P-282 and Escherichia coli E-107 show resistance to chlortetracycline (CTC) that can be ascribed to the acquired ability for energy-dependent "counteraction" against penetration of the antibiotic into cells. As a consequence, inhibitors of energy processes stimulate absorption of CTC by the resistant strains, and thereby increase their sensitivity to the antibiotic. The investigated bacterial strains absorb CTC via a transport system of oxalacetic acid just like the resistant strains bred under laboratory conditions. The CTC transport system has pronounced stereo-specificity and is used to absorb analogs of the antibiotic with intact phenol diketone or diphenolic molecular structure. These analogs, just like the natural antibiotic, induce increased resistance to CTC. No change in the transport system of the antibiotic is observed in the induction process. The degree of increase in resistance that arises as a result of induction is due entirely to the reduced absorption of the antibiotic by the bacteria. Figures 2; tables 5; references 21: 9 Russian, 12 Western.

USSR UDC 576.851.274.589

ISOLATION OF BACTERIOPHAGES OF METHANE-OXIDIZING BACTERIA, AND INVESTIGATION OF THEIR PROPERTIES

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 14 Jun 76 pp 1056-1062

TYUTIKOV, F. M., BELYAYEVA, N. N., SMIRNOVA, Z. S., TIKHONENKO, A. S., and KRIVISKIY, A. S., All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Institute of Molecular Biology, Academy of Sciences USSR

[Russian abstract provided by the source]

[Text] Five strains of phages that are specific to species of Methylosinus sporium, Methylosinus trichosporium and Elavobacterium gasotypicum have been isolated for the first time in the Soviet Union from pond water, a

paste of methane-oxidizing bacteria and the culture liquid of a laboratory fermentation vessel. So far, efforts have been unsuccessful in isolating phages that produce lysis of Methylocystis impressionis, Methylomonas agile and Methylococcus capsulatus. The authors also studied the fine structure of the isolated phages, the form of negative colonies, the spectrum of lytic activity and serological properties. The isolated phages are classified into two sharply defined groups with respect to morphology of virions, form of negative colonies and serological properties, and into three groups with respect to the spectrum of lytic activity. Figures 4; tables 4; references 5: 4 Russian, 1 Western.

USSR UDC 576.8.095:577.472(282.247.41)

RATE OF MULTIPLICATION AND PRODUCTION OF BACTERIOPLANKTON IN THE VOLGA RIVER

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 26 Mar 76 pp 1082-1086

TARASOVA, T. N., Gor'kiy State University

[Russian abstract provided by the source]

[Text] The author determines the length of a generation and volume of production of bacteria in the Volga. The average length of a generation for bacterioplankton was found to range from 35.6 to 62.1 hours per season in different years. The average daily production of bacteria per season is equal to 30-50% of the biomass. Experiments are conducted to find the length of exposure of collection flasks that is optimum for the Volga in determining the length of a generation and volume of production. Figures 3; tables 5; references 12 (Russian).

USSR UDC 576.851.9.095(571.66)

THERMOPHILE BACTERIA OF KAMCHATKA HOT SPRINGS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 22 Jan 76 pp 1087-1091

LOGINOVA, L. G., KHRAPTSOVA, G. I., GOLOVINA, I. G., TSAPLINA, I. A., YAKOVLEVA, M. B., and BOGDANOVA, T. I., Institute of Microbiology, Academy of Sciences USSR

[Russian abstract provided by the source]

[Text] Species of spore-forming bacteria with optimum development from 40 to 65°C--Bacillus stearothermophilus, Bac. brevis, Bac. subtilis, Bac. cereus, Bac. megaterium and Bac. licheniformis--were collected from hot springs of Kamchatka where the water temperature is 50-93°C and pH is 6.3-7.3. The isolated bacteria have exceptionally high biochemical activity. This shows that they play a fairly important part in breaking down organic substances. Figures 2; tables 2; references 13: 10 Russian, 3 Western.

USSR UDC 552.578.1:576.809.53

CONCERNING THE MECHANISM OF CO-OXIDATION OF ETHANE BY INTACT CELLS OF OBLIGATE METHYLOTROPHS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 15 Jun 76 pp 1105-1107

MALASHENKO, YU. R., ROMANOVSKAYA, V. A., SOKOLOV, I. G., and KRYSHTAB, T. P., Institute of Microbiology and Virusology imeni D. K. Zabolotnyy

[Abstract] Previous research has shown that obligate methylotrophs can oxidize ethane only in the presence of methane, i.e., the ethane is co-oxidized. In this paper, methods of enzymatic kinetics are used to study the oxidation of ethane and methane, and an investigation is also made into mechanisms by which the oxidized derivatives of ethane show up in the culture fluid of methylotrophs. Intact cells of Methylomonas rubra 15SH were studied. It was found that oxidation of ethane and methane is catalyzed by the same enzyme at the same enzyme-active center. Therefore this enzyme is not absolutely specific, and may attack ethane, which is a close homolog of methane that can be considered as a compound where the methyl radical replaces one of the hydrogens. A study of the kinetic characteristics of propane inhibition of methane oxidation showed that propane is also a competitive inhibitor. Linkage of the reactions of ethane and methane oxidation is proved by the fact that the ethane can be oxidized only after methane oxidation produces the appropriate reduced coenzyme. Figures 2; references 7: 5 Russian, 2 Western.

USSR UDC 576.8:577.47

POPULATION OF MICROORGANISMS AS A FUNCTION OF WATER FLOWRATES IN SMALL RIVERS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 23 Mar 76 pp 1110-1112

RESHETKOVA, N. B., Institute of Timber and Wood Pulp imeni V. N. Sukachev, Siberian Department, Academy of Sciences USSR

[Abstract] The relation between the bacteria population and hydrological conditions was investigated on tributary rivers of Lake Baikal in the Khamar-Daban Mountains. The results showed a maximum population of bacteria during spring flooding and a minimum in midsummer, followed by a slight increase with sharp peaks during the rainy season. It was found that felling of trees or forest fires cause a considerable increase in water level, but no increase in bacterial population, which makes it difficult to establish a direct relationship between these quantities. Figures 2; references 5: 4 Russian, 1 Western.

USSR UDC 576.851.4.095.383:377.155

INVESTIGATION OF THE DYNAMICS OF ACCUMULATION OF EXTRACELLULAR PROTEINS OF SERRATIA MARCESCENS AND THEIR NUCLEASE ACTIVITY IN THE PROCESS OF CELL GROWTH

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 23 Apr 76 pp 979-983

YASNOVA, L. N., and PUCHKOVA, L. I.

[Abstract] The authors study the dynamics of synthesis of extracellular nuclease and its accumulation in the culture fluid of Serratia marcescens B-10 M-1. Experiments showed a peak in nuclease activity after 30 hours at the end of the log-phase, and another after 66 hours when cell decomposition was predominant. Continuous accumulation of protein in the culture fluid was observed. The DNA-ase/RNA-ase activity ratio averaged 1.3-1.5 with slight fluctuations during growth. Based on the results of the experiments and electrophoretic mobility analysis the authors conclude that the culture fluid contains a single enzymatic complex that depolymerized both DNA and RNA. Figures 4; tables 2; references 18: 10 Russian, 8 Western.

USSR UDC 576.851.4.095

SOME PARTICULARS OF THE PHYSIOLOGY OF PIGMENT STRAINS OF SERRATIA MARCESCENS AND THEIR NON-PIGMENT VARIANTS WITH INCREASED NUCLEASE ACTIVITY

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 6, Nov/Dec 76 signed to press 26 Jan 76 pp 1045-1048

PORFIR'YEVA, O. V., YUSUPOVA, D. V., and BELYAYEVA, M. I., Department of Microbiology, Kazan' State University

[Russian abstract provided by the source]

[Text] A study of some particulars of the physiology of non-pigment variants of Serratia marcescens with elevated activity of extracellular nuclease showed that the non-pigment variants have more intense respiration when the energy substrate is glucose, glycerol, inositol and maltose, a high respiratory factor, lower rate of growth and multiplication, lower efficiency and lower thermogenesis. It is hypothesized that non-pigment strains of S. marcescens have unbalanced growth. References 5: 4 Russian, 1 Western.

USSR UDC 616.988-084.4

VIRAL DISEASES AND MEANS TO INCREASE THE EFFECTIVENESS OF THEIR CONTROL

Moscow VESTNIK AKADEMII MEDITSINSKIKH NAUK SSSR in Russian No 12, 1976 pp 61-65

ZHDANOV, V. M., and L'VOV, D. K., Moscow

[Abstract] During the past Five-Year Plan, some results were achieved in the control of viral infections. The first effective means of chemotherapy and chemoprophylaxis of viral infections were tested during this time--marboran and remantadin for smallpox and influenza. Studies on the molecular biology of viruses were widely developed during this time. Studies of viral ecology also expanded significantly. Based on the peculiarities of the circulation of various ecological groups of arboviruses in various geographic zones, natural infectious foci in the USSR were predicted. Systematic checking of the prediction led to the isolation of 27 viruses, 13 of which were registered as new viruses for science in the international catalogue. Some of these viruses have been proven to be pathogenic for man. The study of their circulation is important in the prevention of possible human disease in newly occupied regions of our country, particularly since extremely active foci of what were earlier thought to be tropical arboviruses were detected in the now intensively occupied sub-Arctic. Virology, though it has its problems and remaining tasks, is thus at the juncture of such areas of medicine as oncology, endocrinology, medical genetics, and forms a unique growth point, the development of which will go far to determine the successful solution of a number of medical problems. There is every reason to believe that Soviet virology will cope with the tasks which currently stand before it.

USSR UDC 616.981.31-092.9:597.828

# NAG-INFECTION IN RANA TEMPORARIA SUBJECTED TO HYPOTHERMIA

Moscow BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in Russian Vol 82 No 12, Dec 76 signed to press 26 Apr 76 pp 1466-1469

AVTSYN, A. P., SHAKHLAMOV, V. A., TRAGER, R. S., TIMASHKEVICH, T. B., POLYAOKOVA, G. P., BALYN', I. R., and KALININA, N. A., Institute of Human Morphology, Academy of Medical Sciences USSR, Moscow

[Text-English language abstract supplied by authors] Rana temporaria kept under hypothermic conditions approaching anabiosis were inoculated with NAG-vibrios and examined clinically, bacteriologically, histologically, and electron microscopically. Oral inoculation of hypothermic frogs with NAG-vibrios resulted, in 18 to 24 hours, in the development of acute NAG-infection resembling the cholera-like syndrome, and characterized by general intoxication and local enteropathogenic effects. NAG-vibrios persisted in the frog gastrointestinal tract for a long time after cessation of the acute period of the disease. Figures 3; references 7: 5 Russian, 2 Western.

USSR UDC 612.86

RECEPTOR REACTIONS TO AMINO ACIDS RECORDED FROM THE SURFACE OF THE OLFACTORY BULB

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 42 No 12, Dec 76 signed to press 23 Dec 75 pp 1811-1817

RUZHINSKAYA, N. N., Laboratory of Ichthiology, Institute of Biology of Waters of the Interior, Academy of Sciences USSR, Borok

[Abstract] A study is made of the spontaneous and evoked adequate stimulation of impulse activity in various sectors of the olfactory bulb of the carp and changes in this activity under the influence of $10^{-3}$ M of $\gamma$-aminobutyric acid. The possibility is shown of recording the pulse activity of the olfactory receptors of the carp from the surface of the olfactory bulb. The olfactory receptors of the carp are shown to be sensitive to solutions of certain amino acids at rather low concentrations ($10^{-6}$-$10^{-9}$ M). All of the amino acids used, regardless of concentration, caused an increase in pulse activity. Certain amino acids demonstrated a linear dependence of integrated response on logarithm of concentration. A group of olfactory fibers was found having high selective sensitivity to histamine and to water from the aquarium in which the carp were maintained. The results indicated that the source of low-amplitude activity on the surface of the rostral and median segments of the bulb is to be found in the axons of the receptors. Figures 5; references 10: 2 Russian, 8 Western.

USSR UDC 612.5+612.2

INTERACTION OF THE SYSTEM OF REGULATION OF CONTRACTIVE THERMOGENESIS AND EXTERNAL RESPIRATION

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 42 No 12, Dec 76 signed to press 5 Apr 76 pp 1848-1855

LUPANDIN, YU. V., KUZ'MINA, G. I., State University imeni O. V. Kuusinen, Petrozavodsk

[Abstract] A study was made of changes in the electric activity of the respiratory muscles in the process of development of shivering and the influence of the reflex-evoked changes in respiratory motions (additional resistance to respiration, pneumothorax, vagotomy) on the shivering function in the muscles of the trunk and extremities of the cat. EMG of these muscles were studied. The diaphragm and rhythmic neuromotor units of the intercostal muscles are not involved in shivering. Static neuromotor units, in contrast, generated shivering. Reflex changes in respiration caused no significant changes in the level of the thermoregulatory EMG in the muscles of the trunk and extremities. Figures 5; tables 3; references 25: 18 Russian, 7 Western.

USSR UDC 612.825.54+612.84

PROPERTIES OF THE RECEPTIVE NEURON FIELDS IN THE RAT VISUAL CORTEX

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 42 No 12, Dec 76
signed to press 4 Mar 76 pp 1882-1885

GIRMAN, S. V., Moscow State University

[Abstract] Gray and hooded rats produced by crossing wild rats with white laboratory rats were used in a study of the neural mechanism of visual perception. Neural activity was recorded on immobilized, nonnarcotized animals, allowing long-term retention of the portion of the brain exposed for implantation of microelectrodes in good condition. The high contrast sensitivity of neurons in the visual cortex of the rat over a broad range of illumination indicated that the ability to see well in both bright and dim illumination results from neurophysiological mechanisms, rather than solely due to behavioral adaptation mechanisms. The contradictory influence of changes in illumination on different components of the neuron reaction (for example, an increase in the on and a decrease in the off reaction with an increase in illumination) may indicate the presence of two systems--a scotopic and photopic--in the rat retina. Table 1; references 5 (Western).

USSR UDC 612.825+612.821.2

TRACE PROCESSES OF CORTICAL NEURONS DURING RHYTHMIC AND SELF-REGULATED IRRITATION OF THE PERIPHERAL RECEPTIVE FIELDS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 42 No 12, Dec 76
signed to press 18 May 76 pp 1745-1752

VASILEVSKIY, N. N., SUVOROV, N. B., SOROKO, S. I., and KUTUYEV, V. B., Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] A study is made of the peculiarities of the impulse activity of cortical neurons during adequate tactile stimulation of their local receptive fields controlled by the impulsation of these same neurons (autostimulation with positive feedback). The experiments are performed on immobilized nonnarcoticized rabbits. In the experiments with positive feedback, changes are studied in the impulse activity of the somatosensory area of the cortex. Tactile stimuli were applied to the center of the local receptive fields located on the contralateral surface of the skin of the head. Tactile quasi-rhythmic autostimulation caused the frequency of discharge of the neurons to increase and hold stable at a constant level. Autostimulation facilitated more intensive reproduction of trace rhythmic activity. It was found that the dynamics of the mean frequency during autostimulation showed a clear oscillating nature. Trace processes were manifested in both excitation

and inhibition forms. Low frequency periodic oscillations of the mean frequency developing upon autostimulation led to activation of inhibition trace processes. Autostimulation can be considered a promising method for separate study of activation and inhibition trace processes. Figures 4; references 11 (Russian).

USSR

UDC 612.8

PECULIARITIES OF THE REACTIONS OF NEURONS IN VARIOUS SEGMENTS OF THE AUDITORY SYSTEM TO PULSE SIGNALS

Leningrad FIZIOLOGICHESKIY ZHURNAL SSSR in Russian Vol 42 No 12, Dec 76 signed to press 4 May 76 pp 1786-1793

VARTANYAN, I. A., KOTELENKO, L. M., Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

[Abstract] Results are presented from studies and comparison of the responses of neurons in three segments of the auditory system--the cochlear nuclei, inferior colliculus and auditory cortex--to a series of short pulses modulated in amplitude. It is demonstrated that the primary tendency toward transformation of afferent pulses to successive levels of the auditory system consists in a transition from reactions characterized by rather complete reflection of the form of the envelope and time structure of the carrier, to reactions arising only during a limited portion of the time of application of the stimulus. It is found that in successive segments of the ascending auditory path, specialization of the reaction to certain parameters of the pulse-amplitude modulated signals increases, particularly to the direction of change of the amplitudes of the pulses in a series. The experiments were performed on Wistar rats, under narcosis produced by intraperitoneal administration of a mixture of chloralose and urethane. Figures 5; table 1; references 18: 12 Russian, 6 Western.

BULGARIA

# SYNTHESIS AND PHYSIOLOGICAL ACTIVITY OF CERTAIN CHLORALPHENYLBIGUANIDES

Sofia DOKLADY BOLGARSKOY AKADEMII NAUK in English Vol 29 No 10, 1976 signed to press 22 May 76 pp 1527-1530

DECHEVA, G., and KARANOV, E. N., Institute of Plant Pathology, Bulgarian Academy of Sciences

[Abstract] The authors were interested in the synthesis and testing of herbicidal action of N(1)-phenyl-N(3)-(1-hydroxy-2,2,2-trichloro)ethyl biguanides--chloralphenylbiguanides--whose chemical structure permits formaction of contact with cell receptors by means of two or three points. The derivatives shown in Table 1 have been synthesized and assayed.

Table 1

| No. | Initial substances | Products | | |
|---|---|---|---|---|
| | | Chemical name | M. q. °C | Yield % |
| I | Phenylbiguanide hydrochloride | $N_{(1)}$-phenyl-$N_{(3)}$-(1-xydroxy-2, 2, 2-trichloro)-ethylbiguanide | 189 | 83.47 |
| II | *o*-Tolylbiguanide hydrochloride | $N_{(1)}$-*o*-tolyl-$N_{(3)}$-(1-xydroxy-2, 2, 2- trichloro(-ethylbiguanide | 148—50 | 90.06 |
| III | *m*-Tolylbiguanide hydrochloride | $N_{(1)}$-*m*-tolyl-$N_{(3)}$-(1-hydroxy-2, 2, 2-trichloro)-ethylbiguanide | 220 | 85.63 |
| IV | *p*-Tolylbiguanide hydrochloride | $N_{(1)}$-*p*-tolyl-$N_{(3)}$-(1-hydroxy-2, 2, 2-trichloro)-ethylbiguanide | 165 | 91.54 |
| V | *o*-Chloropheiylbiguanide hydrochloride | $N_{(1)}$--*o*-chlorophenyl-$N_{(3)}$-(1-hydroxy-2, 2, 2-trichloro)-ethylbiguanide | 200 | 80.76 |
| VI | *m*-Chlorophenylbiguanide hydrochloride | $N_{(1)}$-*m*-chlorophenyl-$N_{(3)}$-(1-hydroxy-2, 2, 2-trichloro)-ethylbiguanide | 155 | 84.14 |
| VII | *p*-Chlorophenylbiguanide hydrochloride | $N_{(1)}$-*p*-chlorophenyl-$N_{(3)}$-( 1-hydroxy-2, 2, 2-trichloro)-ethylbiguanide | 116—17 | 77.98 |

The chloral derivatives studied manifest appreciable activity in inhibiting the growth of wheat and cucumbers (Table 2) almost all derivatives exceeding the activity of simazine and of m-chlorophenylbiguanide.

Table 2

| No. | Substances | Inhibition of the growth in % | | | | | | | | | | | | *Index of selectivity | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Wheat | | | | | | | | Cucumbers | | | | | |
| | | Roots | | | | Coleoptiles | | | | Roots | | | | | |
| | | Concentrations M | | | | Concentrations M | | | | Concentrations W | | | | Wheat | Cucumbers |
| | | $10^{-6}$ | $10^{-5}$ | $10^{-4}$ | $10^{-3}$ | $10^{-6}$ | $10^{-5}$ | $10^{-4}$ | $10^{-3}$ | $10^{-6}$ | $10^{-5}$ | $10^{-4}$ | $10^{-3}$ | | |
| 1 | I | 4.0 | 1.6 | 6.4 | 15.8 | 3.0 | 0.8 | 3.4 | 3.0 | 5.4 | 2.8 | 6.5 | 24.8 | 1 | :1.6 |
| 2 | II | 6.5 | 3.6 | 2.7 | 44.8 | 6.0 | 2.8 | 1.4 | 4.8 | 6.5 | 8.7 | 12.7 | 79.6 | 1 | :1.8 |
| 3 | III | 9.0 | 9.0 | 15.4 | 46.1 | 4.2 | 1.4 | 4.2 | 18.8 | 5.8 | 12.6 | 14.7 | 72.8 | 1 | :1.6 |
| 4 | IV | 3.3 | 9.8 | 7.2 | 44.3 | 4.6 | 2.0 | 3.0 | 8.0 | 4.0 | 11.2 | 13.6 | 71.4 | 1 | :1.6 |
| 5 | V | 6.2 | 4.8 | 3.4 | 36.1 | 4.6 | 2.4 | 0.6 | 24.4 | 9.8 | 2.6 | 11.5 | 31.4 | 1.2 | :1 |
| 6 | VI | 10.0 | 4.1 | 5.6 | 46.6 | 5.8 | 2.9 | 4.4 | 17.0 | 9.1 | 6.3 | 18.1 | 69.5 | 1 | :1.5 |
| 7 | VII | 1.8 | 5.8 | 22.1 | 95.2 | 2.2 | 3.2 | 3.7 | 61.3 | 7.2 | 6.2 | 26.6 | 85.4 | 1.1 | :1 |
| 8 | Phenylbiguanide | 0 | 0 | 0 | 50.8 | 0 | 0 | 0 | 8.0 | 0 | 5.6 | 10.6 | 68.9 | 1 | :1.4 |
| 9 | Simazine | 0 | 4.6 | 16.9 | 12.0 | 0 | 0 | 9.2 | 5.6 | 0 | 0 | 8.9 | 4.6 | 2.6 | :1 |

* The selectivity index has been calculated from the data on the inhibition of the growth of the roots upon treating the seedlings with a concentration of $10^{-3}$ m.

Results obtained warrant the conclusion that the selectivity of the investigated chlorals is determined by the nature of the substituents in the phenyl ring and by their position in it. Figures 3; tables 2; references 10: 2 Russian, 8 Western.

USSR UDC 615.357.452.015.4:612.17.014.464

# ACTION MECHANISM OF SMALL DOSES OF ADRENALIN IN THE RESISTANCE OF THE HEART TO HYPOXIA

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian No 6, Nov/Dec 76 pp 69-70

KOPTYUKH, V. V., Department of Pathological Physiology, Ternopol Medical Institute

[Abstract] The mechanism of the antihypoxic effect of adrenalin in mice and rats was investigated. Adrenalin at a dose of 0.0005 mg/kg was injected intraperitoneally, after which acute hypoxia was induced in a pressure chamber. The adrenalin increased heart resistance to hypoxia and time of biocurrent retention, and decreased oxygen requirement. In vitro the drug lowered oxygen requirement of mouse cardiac muscle without affecting skeletal muscle and increased glycolysis in the myocardium while decreasing it in skeletal muscle. Carbon dioxide production increased in the myocardium and decreased in skeletal muscle. Oxidative phosphorylation and oxygen uptake in mitochondria was not affected. While heartbeat was unchanged, voltage peak T tended to decrease in the first 20 minutes. Cholinolytic atropine did not change the length of biocurrent retention. This indicates that the positive effect of adrenalin is realized via a cholinoreactive mechanism, increasing the use of anaerobic energy formation pathways. References 17: 14 Russian, 3 Western.

USSR UDC 616.131-008.331.1-021.3-07

# EARLY DIAGNOSIS OF PULMONARY HYPERTENSION, AND SOME QUESTIONS OF ITS CLASSIFICATION

Kiev VRACHEBNOYE DELO in Russian No 12, 1976 pp 16-20

NESTEROV, V. S., deceased, POPOV, A. A., KONOPLEVA, L. F., SHOSTKA, I. P., PANICHKIN, YU. V., and NOVIKOVA, T. G., Chair of Therapy of the Sanitation Hygiene Faculty, Kiev Medical Institute, and Division of Medical Information Systems, Order of Lenin Institute of Cybernetics, Academy of Sciences Ukrainian SSR

[Abstract] Pulmonary hypertension, at the present time, is a fairly prominent disease; yet its clinical diagnosis is unsatisfactorily performed, and apparently only the sharply exacerbated instances are coming to the attention of physicians (that is, those showing strong signs of the disorder in the lesser pulmonary circulation). This is clearly associated with physicians' insufficient familiarity with the clinical manifestations of the disease, and also with the absence of any classification system reflecting the clinical stages of its development. Meanwhile, diagnosis of pulmonary hypertension in the early stages (just when there are no profound sclerotic alterations in the vessels of the lesser circulation, and when treatment, both therapeutic and surgical, is more effective) is especially important. The situation is complicated, also, by the large number of variously-based classification systems which have been offered over the years. The authors studied 1,035 cases of pulmonary hypertension, in patients ranging in age from 5 to 77, whom they treated over the past 16 years. In these they were able to distinguish three developmental stages, both in primary and in secondary pulmonary hypertension: 1) the labile; 2) the persistent; and 3) the stable, accompanied by developed sclerotic and dystrophic changes in the arterial walls. The details of recognizing and treating the three stages, in terms of symptoms, time and other factors, are given, and recommendations are made. Graphic diagnostic charts, together with pressure information for the three stages, are included. A general classification system is suggested. Figures 3.

USSR UDC 100.200

CHARACTERISTICS OF NEURON ELECTRICAL RESPONSES IN THE SUPERIOR OLIVARY COMPLEX TO AMPLITUDE-MODULATED SOUNDS FROM VARIOUS DIRECTIONS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 4 Mar 76 pp 162-165

LAN, TA TUN

[Abstract] The characteristics of the electrical reactions of the nerve centers of the auditory analysor have been studied by a number of researchers; however, regarding the reactions of the nuclei of the superior olivary complex to ultrasonic stimuli, and also the role of this structure in determining the sound source, only a very few studies have been made (1973, 1974, 1976). Using large bats as test animals, the author found that some of the neurons of the superior olivary complex respond to amplitude-modulated signals with a frequency of discharge exactly equal to that of the amplitude modulation, this representing a reaction of synchronization. The thresholds of the reaction of synchronization, however, depend on the direction of the signals directed at the animals. These responses are illustrated in a number of graphs. Figures 4; references 7: 5 Russian, 2 Western.

USSR UDC 576.1

EVOLUTION AS A POLYQUALITATIVE PROCESS. PART I.

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 27 Oct 75 pp 7-18

AGAYEV, M. G.

[Abstract] Although long recognized in principle, the extraordinary complexity of the phenomenon of evolution has never been concretized, or put to use in specific ideological situations. As a matter of fact, this characteristic of the evolutionary process can be applied in practice to overcome various unjustified simplifications of biology, and to enhance our personal understanding of this most important of all biological phenomena. On this basis the author sets out to establish a tentative outline of the concept of "supercomplexity" in evolution, employing, as a methodological principle, the philosophic idea of the polyqualitative character of all phenomena whatever. This fundamental characteristic of evolution makes itself felt most distinctly in the fact that evolutionary changes of any scale or type whatever present certain numerous and universal characteristics. The "polyqualitativeness" of evolution is the basic, though not by any means the only, manifestation of "supercomplexity." Fifteen characteristics of the evolutionary process are considered by the author in individual detail: neogeneity,

historicity, directionality, and so forth. Extensive reference is made to relevant published ideas having a bearing on the matter, but few of these go back further than 10 or 15 years. Very little specific, biological data appear in this paper, but there is a useful bibliography of 86 items. References 86: 53 Russian, 33 Western.

USSR UDC 598.2:591.58

SONIC COMMUNICATION AMONG ANIMALS, ON THE EXAMPLE OF BIRDS

Leningrad VESTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, signed to press 15 Jan 76 pp 19-30

MAL'CHEVSKIY, A. S.

[Abstract] Among all classes of animal life, birds stand apart by virtue of the extreme variety of their sonic capabilities and means of communication. The author generalizes the experience of many years' study of bird sounds and calls, citing a number of species and referring to the works of several authors on the subject. Several "psychologically" different types of sonic information in animals are distinguished: signalling (coded sound information), situative, and emotional, not to mention a type of communication based on accompanying sound. All these, apart from birds, are characteristic of mammals and of man himself. Among birds which are free to mimic, there exists, in addition, a special type of sonic communication--namely, the imitative--which opens the possibility of generation-to-generation transmission of those important voice signs of the species which are not strictly inheritable. It was on the basis of the type of sonic information in question, in the process of laboring social activity, that human speech developed. References 36: 13 Russian, 23 Western.

USSR UDC 612.826:612.824/-06:612.275.1

# FEATURES OF THE VASCULAR CONDITION AND OF IMPEDANCE IN THE HYPOTHALAMUS AND OF THE HORN OF AMMON AND SOME VEGETATIVE REACTIONS IN HIGH ALTITUDE HYPOXIA

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian
No 6, Nov/Dec 76 signed to press 28 Feb 76 pp 54-58

ORESTENKO, YU. N., and KOVALEV, N. M., Department of Pathological Physiology, Zaporozhe Medical Institute

[Abstract] The blood supply, vascular tonicity and impedance of the anterior hypothalamus and Ammon's horn, as well as certain vegetative reactions, were studied in hypoxia in ten rats by microstereography and EKG. Electrodes of diameter 0.3 mm were isolated along the length of the organs at 3 cm intervals. A general vascular dilation on ascent and contraction on descent was found, but various degrees were observed in both formations. The hypothalamus tended to be less reactive. The maximum pulse oscillation in the hypothalamus was 2.8 times less than in Ammon's horn and vascular changes ceased sonner, suggesting hypothalamal overexertion. Changes in vascular tone in the two formations were not correlated. Impedance changes were correlated with those in the rheogram, with absolute impedance in the hypothalamus less than that in Ammon's horn. These changes were connected with the displacement of the conductive liquor during vascular dilation. Heartbeat accelerated at the beginning of simulated ascent and descent with subsequent deceleration, while respiration rate was accelerated during hypoxia. No changes in hypothalamal reaction to hypoxia were observed during ten days of investigation, while in Ammon's horn the amplitude of vascular changes decreased and impedance increased. Figures 2; references 22: 17 Russian, 5 Western.

CZECHOSLOVAKIA

## INCORPORATION OF MEDICAL RECORDS INTO THE INFORMATION SYSTEMS OF INDUSTRIAL ENTERPRISES AND SOME SUGGESTIONS FOR ITS APPLICATIONS

Prague CESKOSLOVENSKE ZDRAVOTNICTVI in Czech Vol 24 No 11, Nov 76 signed to press 16 May 76 pp 465-471

HORSKY, ANTON, Mu Dr, KUCHAR, MILAN, Engineer, Okres Institute of Public Health, Nove Zamky, Mathematical Center, Elektrosvit, National Enterprise, Nove Zamky

[Abstract] The authors describe their method of using computer technology in a medical center of an industrial enterprise to achieve a continuous monitoring of the health conditions of individual employees. The reason for using computerized health records in large industrial enterprises are discussed; the main advantage is a fast access to all pertinent information. The cards of individual employees should carry their names at the top of the card, and other information should be branched out under special columns. The authors developed a new method for storing medical and personal information alongside technical data needed for operation of large plants. The information stored on an individual's card should cover, apart from medical data, details of his private life, his family, his social connections, job performance, and demographical data. The physicians should record only medical information on these cards, and should have access only to the recorded medical data. Although the data recorded on an individual's card should be fully comprehensive in covering all the aspects of the person's life, such data should not be printed on medical records, and should not be accessible to medical personnel. Records of all periods of sickness, and of all the working hours lost because of medical reasons should be kept up to date on the cards. Figures 5; references 8: 6 Czech, 1 Russian, 1 Western.

CZECHOSLOVAKIA

## HEALTH EDUCATIONAL SURVEYS IN THE REGION OF WESTERN BOHEMIA

Prague CESKOSLOVENSKE ZDRAVOTNICTVI in Czech Vol 24 No 11, Nov 76 pp 477-485 manuscript received Jan 76

ADAMEC, C., Ph Dr, KIRINOVICOVA, J., Mu Dr, Institute of Medical Education, Prague, Regional Institute of Public Health of Western Bohemia

[Abstract] The Institute of Medical Education of Prague, and the Department for Medical Education of the Regional Institute of Public Health at Pilsen conducted various surveys concerned with health care education in the region of Western Bohemia in the period of 1972 to 1974. The investigated individuals were asked questions concerning their health, and questions dealing with their awareness of the problems of health consciousness. The subjects

covered included the knowledge of first aid principles by children younger than 15, questioning of visitors to the exhibition "Food and Health" on subjects dealing with preservation of biological values in food, and discussions with visitors to the exposition "The World of Children" dealing with problems of interpersonal relationships with children. Other topics studied included usage of drugs by medical personnel. Medical personnel were also surveyed by a questionnaire dealing with medical education needed to prevent the misuse of drugs. It was found that better information concerning first aid should be available to workers. Tables 4; references 10: 7 Czech, 1 Russian, 2 Western.

USSR UDC 614.78:628.49

A HYGIENIC VIEW OF MECHANIZED BIOFERMENTATION AS A METHOD OF DECONTAMINATION OF SOLID REFUSE

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 3 Feb 76 pp 22-26

RUDEYKO, V. A., professor, SHCHERBO, A. P., candidate of medical sciences, Leningrad Sanitary-Hygiene Medical Institute

[Abstract] An essential prerequisite for life in cities is well-organized sanitary decontamination, especially of solid wastes. In 1965 about 1.2 million $m^3$ of such refuse was removed out of Leningrad; in 1975, about 2.5 million. Domestic refuse of Leningrad is from 22 to 29.5% food waste and 32 to 44% paper. Their wetness varies from 35 to 69.9%. Organic substance in the waste is 49.3 to 53.2% in the spring-summer, and 58-64.5% in the fall. The refuse is a potential source of epidemics; it harbors helminths (Ascaris eggs), pre-imago mosquitoes, and rodents, in addition to bacteria. Incineration is impractical, it wastes fuel, and is another source of pollution. Most effective decontamination is achieved in 5-day mechanized biofermentors; compost from 3-day biofermentation is equivalent to mildly-contaminated soil and is recommended as the minimal cycle (helminth eggs and pre-imago mosquitoes are absent). Two day fermentation is inadequate and further decontamination is required on a compost heap underground. Table 1; references 8 (Russian).

USSR UDC 628.112.2(477)

HYGIENIC PROBLEMS OF REPLENISHMENT OF GROUND WATERS IN THE UKRAINE

Moscow GIGIYENA I SANITARIYA in Russian No 12, Dec 76 signed to press 15 Mar 76 pp 15-18

RAKHOV, G. M., candidate of medical sciences, and TSAPKO, V. V., doctor of medical sciences, Kiev Scientific Research Institute of General and Communal Hygiene imeni A. N. Marzeyev

[Abstract] Underground waters of the Ukraine are used for local and centralized industrial and drinking water supply. The UkrSSR has more than 3000 artesian wells and tens of thousands of pipe and shaft wells. Feeding of ground water sources occurs through filtration and infiltration from river beds, reservoirs, canals, lakes, and ponds. Water use can exhaust supply and attention to its replacement is important; sources of contamination must be known. Chemical and bacteriological data on surface water sources are tabulated (for areas of Sevastopol, Mukachevo, Ivano-Frankovsk, and Chernovtsy). Hydrological conditions and degrees of pollution vary with the

locality. The authors have found that choice of a method for artificial replacement of ground waters depends on many features, granulation and filtering properties of the soil, ground contour, surface water qualities, effectiveness of its preinfiltration processing. From the hygienic point of view, acceptable replenishment of ground water using infiltration installations must assure natural filtration of water from these installations, which are to be placed beyond the limits of the cone of depression of water-scoop wells. The installations must respond to existing features. Table 1; no references.

USSR UDC 616-082(-21+-22)

REDUCING THE DIFFERENCE BETWEEN LEVELS OF MEDICAL SERVICES PROVIDED TO URBAN AND RURAL POPULATIONS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, 1977 signed to press 26 Oct 76 pp 14-22

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

[Abstract] It is recognized that the level of medical services provided to the population in rural and urban areas differs. It is pointed out that this is largely a result of the greater size of rural adminstrative units, with the resulting dispersal of professional medical personnel over much larger areas and the concomitant requirement for longer travel distances to reach medical aid in rural areas. The solution to the problem of improving the health care in rural areas is seen primarily as one of comprehensive development of rayon hospitals as the primary centers of specialized medical aid for the rural population. A goal is to have no less than ten physician specialists available to the population in each rayon. In parallel with these developments, more efficient utilization of hospital beds available to the rural population is being organized. Portable medical equipment and vehicles must be used as a means of provision of medical services to the rural population in cases where it is impossible or impractical to provide these services at rayon hospitals. The problem of rural public health service is recognized as a very important and complex problem. Tables 3.

USSR

UDC 351.77(477.83)

MEANS FOR IMPROVING METHODS OF ADMINISTRATION OF OBLAST PUBLIC HEALTH SERVICES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, 1977 signed to press 9 Aug 76 pp 22-26

MANASTYRSKIY, R. YA., docent, and PETRISHIN, S. M., candidate of medical sciences, L'vov Oblast Public Health Department

[Abstract] Considerable attention has been given in L'vov to improvement of the style and methods of administration of public health, planning of medical aid, based on study of the morbidity of the population and long-term prediction of demographic processes. This was begun by organizing the work of members of the public health service. A Management School was set up in the Oblast Department of Public Health and the administrative abilities of health service workers were tested. Furthermore, each year there are two or three conferences of health professionals on the subject of health care delivery. Such steps as organization of a document reproduction center at the Oblast Hospital to allow more rapid dissemination of instructions and orders throughout the area have been taken. Methods of scientific organization of labor are being introduced in order to make the provision of health services to the rural population and utilization of available hospital beds more efficient.

USSR

UDC 614.2.07:007(477.62)

ORGANIZATION OF INFORMATION SUPPORT SYSTEMS FOR PUBLIC HEALTH UNITS AND INSTITUTIONS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, 1977 signed to press 30 Jul 76 pp 26-30

KOBETS, G. P., KOKIN, N. K., TSVANG, R. L., KOLESNIKOV, B. D., SPESIVNYY, V. S., and MALEYEV, V. P., Donetsk Oblast Public Health Department

[Abstract] Based on the experience of organization of the Information Service of the Donetsk Oblast Public Health Department, an information supply system for city health departments, central city and rayon hospitals, as well as administrative workers of city and oblast public health institutions in Donetsk Oblast has been successfully developed. Organization of the information support provided to administrative workers in public health units and institutions has been shown to be expedient and effective; it could be used by other oblasts as well, as giving due consideration to local conditions. The operation of the system is described and tables present the statistical data on the number of reports filed each year and quantities of information contained in the reports. Tables 2.

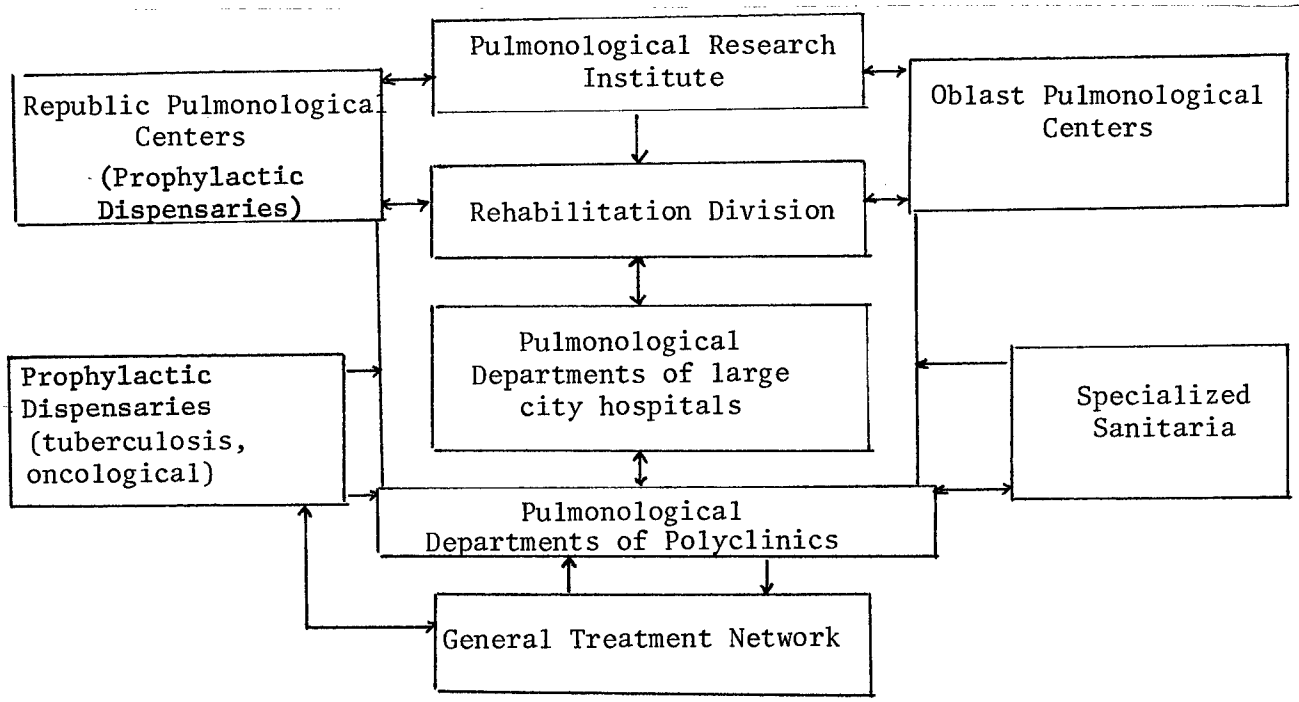
USSR UDC 616.24-082(47+57)

# PRESSING PROBLEMS OF ORGANIZATION OF PULMONOLOGICAL ASSISTANCE IN THE USSR

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, 1977 signed to press 30 Jul 76 pp 30-34

PUTOV, N. V., FEDOSEYEV, G. B., TSYURA, I. G., and TYSHETSKIY, V. I., All-Union Scientific Research Institute for Pulmonology, Ministry of Health USSR, Leningrad

[Abstract] Many problems of the organization of pulmonological assistance to the population require further discussion and resolution. They include primarily the study of the need of the population for specialized pulmonological assistance, determination of the role of the pulmonological service in the public health system, its tasks and means of development. A diagram of the organization of the Pulmonological Service of the USSR Ministry of Health is presented:




The basis of further planning of the prevention and treatment of lung diseases must be unified forms and principles of organization of pulmonological assistance according to this plan. The principles include: following the chain of command in medical servicing of pulmonological patients (polyclinic--hospital--rehabilitation department--sanitarium--polyclinic); early diagnosis of nonspecific lung diseases and timely determination of aggravation of inflammatory processes; timely and efficient utilization of the most effective methods of prophylaxis and treatment; extensive social-hygienic and sanitary-recuperative measures to prevent diseases of the organs of respiration. References 6 (Russian).

USSR UDC 614.1:313.13

INDICATORS OF MORBIDITY OF THE POPULATION

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 1, 1977 pp 35-38 manuscript received 18 May 76

ROMENSKIY, A. A., ZHUKOVSKIY, G. S., LEONOV, S. A., NEPOMNYASHCHIY, V. P., All-Union Scientific Research Institute for Social Hygiene and Organization of Public Health imeni N. A. Semashko, Moscow

[Abstract] Terms used in reporting morbidity of the population of the USSR are discussed and defined. It is pointed out that the number of times citizens visit doctors for medical assistance is not a reliable indicator of the morbidity of a given disease, since visits include both acute and chronic patients, and a distinction must be drawn, separating "new cases" from repeat visits before the actual morbidity can be defined. The difficulty of doing this is obvious. References 5: 4 Russian, 1 Bulgarian.

USSR UDC 614.2-058.9

ORGANIZATION OF MEDICAL SERVICE FOR THE RURAL POPULATION

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 11, Nov 76 signed to press 1 Jun 76 pp 70-74

YULDASHEV, SH. G., Candidate in Medical Science and MUKHTAROV, S. S., Bukhara Oblast Health Department

[Abstract] In order to bring rural medical service up to urban levels many hospitals, treatment centers, polyclinics, pharmacies, sanitary-epidemiology stations, and obstetrician assistant and infant feeding centers have been built between 1966 and 1975 in the Bukhara oblast' and more are under construction. Rural district hospitals have been reorganized and have increased their specialization, while ambulatory polyclinic service has been decentralized. Obstetrician assistant centers will not be further expanded, due to the organization of ambulatory centers in each kolkhoz and sovkhoz. Rapid medical aid has been expanded and centralized and auxiliary medical services have increased. While the frequency of rural use of physicians has increased in the last five years, it is still two times smaller than the urban frequency. For this reason the trends described above must continue. Table 1.

USSR UDC 614.2.07:371.7

THE JOINT WORK OF HEALTH DEPARTMENTS AND EDUCATION DEPARTMENTS AS REGARDS MAINTAINING THE HEALTH OF SCHOOLCHILDREN

Moscow PEDIATRIYA in Russian No 12, 1976 signed to press 8 Dec 75 pp 26-28

BOGDANOV, A. M., Orenburg Oblast Health Department

[Abstract] Health and public-school authorities of Orenburg Oblast during the past five years have collaborated closely in several areas intimately associated with the health of schoolchildren: 1) joint planning, by the two groups of officials, of measures for improving the sanitary-hygienic and anti-epidemic regimen of the schools; 2) the organization of nutritional programs; 3) the implementation of thorough medical examinations and the treatment of children with deviations from any health norm; 4) the organization of medical control over physical culture and sports; and 5) the implementation of measures which will assure fulfillment of complex health plans for schoolchildren. Details of this collaboration (conferences, distributed literature, etc.) are spelled out in the article. Moderate positive results have already been achieved, especially in the areas of sanitation-hygiene and general organizational capability.

USSR UDC 614.1:313-053.5(571.14-22

THE STATE OF HEALTH OF RURAL SCHOOLCHILDREN

Moscow PEDIATRIYA in Russian No 12, 1976 signed to press 19 Dec 75 pp 10-14

KAGANOVICH, D. I., PETRUNICHEVA, K. P., and TSUKETTI, Novosibirsk Scientific Research Sanitation Institute

[Abstract] Following the example of earlier medical efforts in the interest of schoolchildren of Novosibirsk Oblast (more than 5,000 histories of rural children were plotted during 1959-1960 alone), the present study was undertaken on some 3,000 children for the 1974-1975 school year; these ranged in age from 7 to 17. The following conclusions were reached: 1) During the past 15 years, the health of Novosibirsk Oblast school children has definitely improved, as regards acuity of vision, posture and harmonious physical development; 2) maturation among the children advances very rapidly, as clearly shown by increase in the anthropometric indices, improvement in a number of functional indices, and acceleration of sexual development; and 3) on the negative side, the comparatively wide distribution of individual forms of illness (chronic tonsillitis, illnesses of the alimentary tract, anomalies of refraction and caries) points up the need for increased dispensary service for children in this area. The article includes various scattered data, two graphs contrasting the development of children in the city of Novosibirsk and in the surrounding rural area, but no tabular (summary) data. Figures 2; references 4 (Russian).

USSR

NOISE POLLUTION IN THE RSFSR

Moscow ZDOROV'E in Russian No 12, 1976 pp 10-11

AKULOV, K., Deputy Minister of Public Health, RSFSR

[Abstract] The Presidium of the Council of Ministers, RSFSR, adopted a resolution on the creation of local councils of the Commission for Noise Control in cities and populated points of the republic in 1968, and in 1973, a resolution was passed by the Council of Ministers, RSFSR, "On Measures to Reduce Noise at Industrial Enterprises, in Cities and Other Populated Points." This issue is widely discussed at meetings of all levels of governmental bodies. In addition to technical institutes, highway department workers in Moscow and other cities in the RSFSR are drawing up noise maps, which are used to adjust general plans, develop new plans for zoning and construction as well as reconstruction of streets and neighborhoods, to plan traffic patterns, etc. Timed traffic lights have been introduced in Moscow and many other cities to reduce noise. Significant work has been done in the repair of streetcar tracks and replacement of old vehicles with new, quieter versions. The noise level of equipment installed in the lower floors of residential buildings is being reduced by repair or replacement of equipment which is too noisy. In Moscow, over 300 enterprises have been reconstructed to reduce noise output. New lower noise standards are being promulgated for all sorts of products, including electric shavers, refrigerators, motor vehicles and aircraft. Increasingly, new products are tested to see that they meet the maximum noise requirements before being put into production.

USSR

NOISE POLLUTION IN GEORGIA

Moscow ZDOROV'E in Russian No 12, 1976 p 11

GORGOSHIDZE, V., Secretary of the Republic Interdepartmental Coordination Commission on Noise Control, Chief of the Main Sanitary-Epidemiological Administration, Ministry of Health, Georgian SSR

[Abstract] Ministries, departments and enterprises of the republic have undertaken a number of important measures to localize the growth rate of noise pollution, and in some cases even decrease noise levels. The Tbilisi All-Union Scientific Research Institute for the Protection of Labor has been particularly active in this area. The Republic Interdepartmental Coordinating Commission has turned particular attention to street and domestic noise in Tbilisi and other cities of the republic. A number of enterprises have been moved outside the cities, one-way traffic installed on streets and in

Tbilisi, the number of underground crossings is being increased. The railroad has installed continuous track on a number of lines. Noise metering laboratories are continuing to study the noise level at airports. During 1975-1976, the noise and vibration level at all industrial enterprises in the republic was measured, and recommendations given for reduction where needed. These recommendations have been included in the plans of the ministries and departments. Noise pollution, however, remains a problem in Georgia.

USSR

NOISE POLLUTION IN ARMENIA

Moscow ZDOROV'E in Russian No 12 1976 pp 11-12

GAMBARYAN, K.,Chairman of Republic Interdepartmental Commission on Noise Control, Deputy Chairman, Council of Ministers, Armenian SSR

[Abstract] The Council of Ministers of the Armenian SSR in May of 1968 created an Interdepartmental Republic Commission on Noise Control to coordinate work, develop combined measures and check fulfillment of these measures. On the initiative of the Republic Interdepartmental Commission and the Executive Committee of the Yerevan City Council of Workers' Deputies, the Acoustics Laboratory of the Armenian Scientific Research Institute for Hygiene and Occupational Diseases of the Ministry of Health, Armenian SSR, has drawn up a noise map of Yerevan. Over 45,000 special reports were made up to provide the factual basis for the map. Among other steps taken to reduce noise, 357,000 trees and bushes have been planted in Yerevan in the last 2 years, and other cities in the republic are also being extensively planted. Many bypass roads are being constructed to move highway traffic away from residential areas. Noise in industrial plants and the noise generated by products produced in Armenia are both being tested, controlled, and standards set. The next session of the Republic Interdepartmental Commission will be dedicated to the subject of shortcomings in the noise control area, in order to allow introduction of more effective noise control measures during the next 5-year plan.

USSR

NOISE POLLUTION IN KAZAKHSTAN

Moscow ZDOROV'E in Russian No 12 1976 p 12

KLEBANOV, YA.; Deputy Chairman of the Republic Interdepartmental Commission on Noise Control, Chief State Sanitary Physician, Kazakh SSR

[Abstract] The Republic Interdepartmental Commission on Noise Control, in accordance with the plan of its operation, has studied the problems of limiting city and domestic noise, noise in production, at trade enterprises and in public catering organizations; noise control on city streets, railroads and in air transport; and the use of architectural and planning measures for noise control. Acoustical laboratories have been set up at city sanitary and epidemiological stations. The Alma-Ata City Executive Committee has begun the work of constructing a noise map of the city, to be published by the end of 1976. Some of the recommendations of the Volgograd Construction Engineering Institute, which is making the map, have been included in the general plan for Alma-Ata. Plans for new industrial enterprises must meet noise control standards before they can be approved. The author recommends that acoustical engineers be included among the members of planning institutes and that sections on noise level calculation and prediction be included in all plans for new construction.

USSR UDC 575.24

STUDY OF THE RADIOPROTECTIVE ACTION OF AMINOINDENES WITH HIGH DOSES OF RADIATION OF MOUSE SEX CELLS

Minsk VESTSI AKADEMII NAVUK BSSR, SERIYA BIALAGICHNYKH NAVUK in Belorussian No 6, 1976 pp 64-67

ROKITSKIY, P. F., and PLOTNIKOVA, S. I., Institute of Genetics and Cytology, Academy of Sciences BelSSR

[Abstract] Published data on radioprotection of the spermatogonium by chemical compounds are few and contradictory. Protection at this stage is of great practical interest since reciprocal translocations induced by radiation in the spermatogonium are transmitted to descendants. I. B. Mosse, at the authors' laboratory has reported (1972) that radioprotective indene compound definitely reduce the level of chromosome damage in the spermacyte and spermagonium. The authors have studied this capability at radiation doses exceeding the lethal. Male mice 2 to 2-1/2 months old were subjected to local irradiation doses of 800 and 900 r. F-11 and F-37 indene compounds were administered 30 minutes prior to irradiation. At the 800 r level, the indene compounds had a positive protective action in the spermacyte stage, there was a definite decrease in chromosome damage at this level; at 900 r the protection was considerably less, while F-11 and F-37 did reduce the frequency of mutations even under the high doses of irradiation they did not protect the spermatogonium against mutation at either level. Table 1; references 14: 11 Russian, 3 Western.

USSR UDC 616.073.75

DEPENDENCE OF EXPOSURE TIME ON THE DIMENSIONS OF THE IRRADIATION FIELD IN X-RAY RADIOGRAPHY

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 11, Nov 76 pp 57-58

BORISOV, B. H., Sanitorium imeni M. I. Kalinin, Yessentuki

[Abstract] Experiments to determine the dependence of exposure time on the dimensions of the irradiation field were conducted on an aqueous phantom. The apparent diameter of the phantom as determined by the contrast and sharpness of the barium powder test object image increased with greater exposure at the same voltage. This indicates that the initial films were overexposed, and the dose exceeded that necessary for diagnosis. In order to obtain optimal image density on going from a field of 30x40 cm to one of 9x13 cm, diagnostically-justified increases in exposure do not occur. Observations indicate that errors in evaluation of the thickness of an object, even on the order of 0.5-1.0 cm, lead to incorrect exposure choice, which negatively influences image quality and leads to undesirable dose increase. Tables 2; references 3 (Russian).

USSR UDC 539.16.047

# THE RESPONSE OF PEROXIDASE ACTIVITY OF BLOOD SERUM TO COMBINED BETA-ROENTGEN IRRADIATION OF THE BODY

Leningrad VENSTNIK LENINGRADSKOGO UNIVERSITETA in Russian Issue 21 No 4, Nov 76 signed to press 15 Nov 75 pp 157-159

MATYUSHICHEV, V. B., TARATUKHIN, V. R., and SHAMRATOVA, V. G.

[Abstract] The effects of combined heat and particle irradiation (beta-roentgen) on the body, the latter being applied in combination and in various doses, have been very little studied, although the matter is one of considerable theoretical and practical importance. Using white rats as test animals, the author applied heat (36°C, relative humidity 80-90%, for 4 hrs) and beta-roentgen irradiation (doses of 2.5 krad + 25 R, 2.5 krad + 50 R, 3.05 krad + 100 R, 4.45 krad + 250 R and 7.4 krad + 400 R), both separately and in combination, to determine their "synergistic" effect on the peroxidase activity of blood serium in periods of 5, 12, 19 and 26 days. It was found that, for all the chosen gradations of radiation, preliminary heating had no perceptible effect on the degree of post-irradiation changes, while the effects of the action of the individual combinations were dose-specific. Some tabulated data accompany the paper. Table 1; references 2: 1 Russian, 1 Western.

USSR UDC 615.46.014.47

AN EXPERIMENTAL-CLINICAL STUDY OF THE NEW NON-WOVEN ANTIMICROBIC MATERIAL 'NIFACELL': A PRELIMINARY COMMUNICATION

Kiev KLINICHESKAYA KHIRURGIYA in Russian Dec 76 pp 24-28

TUROVETS, I. G., professor, BABYKA, A. V., KOLOMIYTSEV, A. K., YATSENKO, V. P., and MIKHNOVSKAYA, N. D., Kiev Medical Institute and Kiev University

[Abstract] During the past 20 years there have appeared increasing numbers of antimicrobic materials which can be used on suppurative wounds; their very number and variety of specific action, however, have presented difficulties in the selection of wound dressings in particular cases. For this reason, there has been a search for general-action agents which can be applied to the body in various circumstances (home, factory, highway, etc.). Of particular note in this connection is the 5-nitrofuran series (furacilin, furadonin, furasolidon, and others), of great value in the treatment of various surgical infections. The Ukrainian Scientific-Research Institute of Paper Products has developed a composite fibrous product which, impregnated with a preparation of the series referred to, offers definite advantage in the external treatment of wounds; it is called Nifacell. Tests reveal that gram-positive and gram-negative microflora are highly sensitive to this material. Over a wide range of amounts applied, Nifacell has no selective toxic affect on the basic systems of the mammalian system; it exhibits no cumulative irritative or sensitizing effects upon external application. References 10 (Russian).

USSR UDC 617:54164

PROSPECTS FOR THE USE OF POLYMERS IN SURGERY IN THE MEDICAL INSTITUTIONS OF THE UKRAINE

Kiev KLINKCHESKAYA KHIRURGIYA in Russian No 12, Dec 76 pp 51-55

KOVALEV, M. M., GOROVENKO, G. G., and SLEPUKHA, I. M., all Professors, and TITARENKO, V. I., Senior Scientific Colleague, Kiev Medical Institute, Kiev Scientific-Research of Tuberculosis and Chest Surgery

[Abstract] The replacement of biological tissues and cavities with substances which are "foreign" to the organism has already found application in many areas of medicine. The appearance of the alloplastic method owes much to the advantages of scientific-technical progress in the USSR. One of the first areas where alloplastic materials were put to daily use is that branch of surgery which has achieved in recent years so great a success in dealing with complex theoretical problems of medicine. It is now 25 years when A. F. FILATOV and I. G. ANDRIANOV proposed the use of dense resorptive materials from the blood of man and animals. In the interim, the alloplastic direction

in surgery has advanced very considerably. One factor in this development of the broad study of question was the 1957 Plenum of the CC CPSU and the 21st Party Congress of 1958. Here also should be mentioned the 1st and 2nd Republic Conferences on the use of polymers in surgery; these bodies attracted the Ukrainian Scientists, in particular, but many others around the country. The future use of polymer materials in medicine and in the production of medical supplies is absolutely assured; this is a new direction standing on the border between polymer chemistry and medicine, and it is capable of creating polymer prostheses to replace internal organs and tissues, and of working out a great many other problems in this general area. Notable results, beginning in 1962, have been achieved by Ukrainian scientists, especially in the area of the synthesis of polymers. References 20 (Russian).

USSR UDC 362.768.2(571.51)

EXPERIENCE OF THE WORK OF 'PIONEER' SANATARIUM CAMPS OF KRASNOYARSK KRAY

Moscow PEDIATRIYA in Russian No 12, 1976 signed to press 16 Dec 75 pp 42-44

YESELEVICH, KH. L., Krasnoyarsk Kray Department of Health

[Abstract] One increasingly important means for improving the impaired health of children is the establishment of sanatarium camps; efforts in this direction have been underway in the Kray for more than 15 years. In 1975 the Kray numbered 40 of these health-improvement camps, accommodating more than 10,000 schoolchildren suffering from some degree of speech or vision impairment, rheumatism, chronic bronchopulmonary illness, posture defects and alimentary disorders. The camps, located as a rule near health resorts or rest homes, include solariums, bathing establishments and regular medical units. Usually only the more seriously affected children are selected for removal to the camps. A careful study is made of the nervous system. The results of these years of existence of the camps are decidedly positive: today, about 25% of the child inmates can be released with moderate degree of improvement, and some 70% with a reasonable degree. The continued existence of the camps, and even their extension, is heartily endorsed.

USSR UDC 619:576.858:578.083

## PREPARATION OF ANTHRAX VACCINE WITH THE AKM-SH APPARATUS

Moscow VETERINARIYA in Russian No 12, Dec 76 pp 28-29

NIKANOROV, B. A., KOLESOV, S. G., KRETININ, V. K., SOLOV'YEV, L. B., POLYAKOV, V. A., BELKINA, R. N., and MITIN, S. S., All-Union Scientific Technology Institute of Instrument Making, State Control Scientific Research Institute of Veterinary Preparations, Orel Biofactory

[Abstract] The AKM-SH is the acronym for the apparatus for cultivation of microorganisms devised by A. F. Shesterenko, which permits growth of organisms on a dense medium (agar) in the least production space. Preparation of anthrax vaccine which uses a standard strain has in the past required large production space. Shesterenko's apparatus, which also is adaptable for plague, cholera, and brucellosis, can be used for anthrax. Conditions of aeration, minimum medium, inoculant, and sporulation were worked out by the authors at the Orel biofactory. The procedure has been developed to spare manual labor. No references.

USSR UDC 619:618.19-085:636.22/.28

## TREATMENT OF MASTITIS WITH UHF CURRENTS

Moscow VETERINARIYA in Russian No 12, Dec 76 pp 63-64

PRISHCHEP, L. G., LYUBIMOV, YE. I., TSOY, YU. A., and BAYKOVA, S. I., All-Union Scientific Research Institute of Rural Electrification, and POPOV, N. I., Moscow Veterinary Academy

[Abstract] The AUSR Institute of Rural Electrification has shown the potential for use of UHF currents directly at machine milking time for their therapeutic effect and positive effect on milk yield due to heat stimulation. The latter heat effect results from warming of the deeper-lying tissues and organs. The UHF involves use of PDA-1 (a mobile apparatus), the UVCh-66(standard issue UHF medical apparatus), and the "Sputnik" a milking machine. Power of the UHF field is given as 70 watts. No details of the UVCh-66 are given. Experimental use of the device has been undertaken, with success, at the Il'yich's Memory kolkhoz in Moscow Oblast, and at the Tokarevo farm. A picture of the device shows it to be simple in construction.

USSR

CONTENT OF COBALT IN THE LIVER OF CATTLE IN VARIOUS OBLASTS OF THE BELORUSSIAN SSR

Minsk VESTI AKADEMII NAVUK BSSR, SERIYA BIALAGICHNYKH NAVUK in Belorussian No 6, 1976 pp 77-80

KAZAKEVICH, I. YA., and VECHER, A. S., Institute of Experimental Botany, imeni V. F. Kuprevich, Academy of Sciences BelSSR

[Abstract] The authors discuss the physiological role of cobalt and the requirement for this trace element. Belorussian soils and plants which grow there are low in cobalt and for this reason the authors have assayed the cobalt content of cattle liver in various areas of the republic. The cattle livers studied were delivered to the Minsk Endocrine Medicine Plant for use in manufacture of Vitagepat, an anti-anemia, B-12 containing preparation. The analytical procedure is carefully described in detail. The livers from Brest, Vitebsk, Gomel, Grodny, Minsk, and Mogilev oblasts contain a low amount of cobalt, averaging 118.87 to 131.67 micrograms per kg of dry tissue. The amount of dry material in the livers ranges from 25.04 to 28.30 percent. Cobalt supplementation of the cattle diet may prove of practical importance. Tables 2; references 19: 18 Russian, 1 Western.

USSR UDC 576.895

THE EFFECT OF LIVESTOCK BREEDING INTENSIFICATION ON ECHINOCOCCOSIS EPISOOTOLOGY IN THE MOLDAVIAN SSR

Kishinev IZVESTIYA AKADEMII NAUK MOLDOVSKOY SSR in Russian No 6, 1976 pp 84-86

KUTYAVIN, G. G., and SPASSKIY, A. A.

[Abstract] The effect of concentrated livestock breeding in large animal complexes on echinococcosis eizootology has been to reduce the cattle infection level to 18-19% and the swine level to 4-5%, but not completely eliminate it. This is due to the alternate host pattern of the parasite, with dogs serving as the definitive host, and the ability of the cestode to change population or species of intermediary host in various generations. The infection of new animals in a large complex can only come from infected dogs. To prevent infection specially trained dogs must be used to keep out wild dogs and all domestic dogs must be regularly wormed. Adequate management of water purification is also necessary.

USSR UDC 631.3:636

THE EFFECTIVENESS OF THE COMPLEX MECHANIZATION OF ANIMAL HUSBANDRY

Moscow ZHIVOTNOVODSTVO in Russian No 8, Aug 76 pp 76-78

GARAZHA, V. P., Head Zootechnician of the 'Nepetsino' Auxiliary Farm, Kolomenskiy Rayon, Moscow Oblast

[Abstract] The advancement of the milk industry during the Tenth Five-Year Plan is illustrated by the example of the "Nepetsino" farm in Moscow Oblast, which has mechanized all its basic operations in the past 10 years. The achievements of the farm during two 5-year periods are illustrated by these data:

| | 1961-65 | 1966-70 | 1971-75 |
|---|---|---|---|
| Output per cow (kg) | 4,506 | 4,658 | 5,025 |
| Fodder consumption per kg of milk | 113 | 113 | 106.9 |
| Labor input per centner of milk (man-hrs) | 5.2 | 4.8 | 3.8 |

It is emphasized that all branches of production must be mechanized, and that mechanization of just one or two has no economic effect (distribution of fodder, collection of manure, water supply to the animals, milking and storage). The various mechanical devices used by the farm are specified. Table 1.

USSR UDC 636.32/.38.082.22(?)

AN INSTALLATION FOR USE IN LINE-TYPE SHEEP JUDGING

Moscow ZHIVOTNOVODSTVO in Russian No 8, Aug 76 pp 79-80

BONDARUK, V. YE., and BORISOV, V. N., Candidates of Technical Sciences; and SHPAK, V. P., Engineer, All-Union Scientific-Research Design-Technological Institute for Machines to Be Used in the Complex Mechanization and Automation of Animal Husbandry Farms

[Abstract] The judging of sheep for breeding and other purposes is a very labor-consuming operation which, in the busy season, takes up 80% of the human labor of a stock farm. The authors developed an installation, or stand, for sheep judging. This consists of an immobile circular platform around which revolve three trolleys for conveying the sheep. Attendants bring a captive sheep down a protected corridor, place it on a trolley, and the trolley is moved into position before the judges' stand. Next the trolley is moved into position before the exit corridor, into which the sheep is quickly removed. In this way three trolleys are kept almost constantly busy, and a small number (five) of human personnel are required.

The installation is rotated electrically. The use of the three-trolley stand for sheep judging has already secured a reduction of 77.7% in the amount of human labor required for this operation. Figures 2.

USSR UDC 631.223.26

THE ESTABLISHMENT OF HARDNESS NORMS FOR SYNTHETIC FLOOR COVERINGS USED IN THE CARE OF PEDIGREED BULLS

Moscow ZHIVOTNOVODSTVO in Russian No 8, Aug 76 pp 80-82

SAVCHUK, D. I., Candidate of Agricultural Sciences, and TKACHUK, V. I., Junior Scientific Colleague, Ukrainian Scientific-Research Institute for the Breeding and Artificial Insemination of Horned Stock

[Abstract] One of the main reasons for the rejection of bulls for use in artificial insemination is some illness of the animal's extremities. Figures indicate that 28 bulls out of 100 are rejected because of some organic disease (arthrosis, osteoarthritis, osteodystrophy and the like); and another 7 because of physical damage (fractures, strains and so on). This situation makes clear the great importance of the living conditions of breeding bulls, including, naturally, the floors of their quarters. Some general guides, based on physiological peculiarities of the animals, are advanced for both industrial and breeding groups. Table 1.

USSR UDC 619.94:636.5

A STUDY OF BACTERIAL POLLUTION OF THE AIR IN CHICKEN HOUSES

Moscow ZHIVOTNOVODSTVO in Russian No 8, Aug 76 pp 82-83

BUTUZOVA, L. G., Candidate of Technical Sciences, Volgograd Engineering-Construction Institute, Bryksin, M. I., General Director of the Tomilinsk Production Poultry Association of Moskovskaya Oblast, and EL'MAN, A. YA., Chief Mechanic of the Association

[Abstract] On the example of the Tomilinsk poultry farm, which has a capacity of from 20,000 to 45,000 laying hens, it may be concluded that the air in the nesting quarters of all such large farms is contaminated with various gases, dust and microbes, and that the concentration of these contaminating materials is indirectly proportional to the efficiency of the ventilation system. At the Tomlinsk farm, in particular, illnesses among the birds were observed in the form of Coli bacteriosis, infectious laryngotracheitis, infectious bronchitis and neurolymphomatosis. The authors also observed

concentration of dust and aerosols at this farm. For the Tomlinskiy farm it is firmly concluded that improvement in the ventilation system will secure an improvement in productivity on the order of 400,000 rubles, and that this figure may reasonably be expected for other large farms. Table 1.

CSO: 1840

- END -