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13 April 1977

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 68

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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I. BIOMEDICAL
Aerospace Medicine

USSR

UDC 577.462

CHANGES IN THE PHYSIOLOGY OF GERMINATION AND THE CYTOGENETICS OF BUCKWHEAT SEEDS WHICH WERE ON BOARD SALYUT-1

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 5 May 75 pp 65-72

PLATONOVA, R. N., OL'KHOVENKO, V. P., PARFENOV, G. P., LUKIN, A. A., and
CHUCHKIN, V. G.

[Text] [Russian abstract provided by the source] Cytological analysis of meristematic cells of the seeds of diploid and autotetraploid buckwheat which had been on the Salyut-1 orbital station for 72 days revealed a small but reliable increase in the frequency of chromosome rearrangements as compared with a control. After the flight, stimulation of seed germination was noted. It is assumed that the detected effects could be caused by temperature changes which occurred during that experiment. Experiments conducted to explain the influence of elevated temperature (37 and 50°, 1 and 72 hours) on seeds of diploid and autotetraploid buckwheat showed that it can cause changes both in the cytogenetic structures and in seed germination processes. Figures 3; Tables 2; References 23: 21 Russian, 2 Western.

USSR

UDC 575.24

PHYTOPATHOLOGICAL ANALYSIS OF RESISTANCE IN SOME MUTANTS OF SUMMER WHEAT
USING THE ISOGENIC LINES

Tallinn IZVESTIYA AKADEMII NAUK ESTONSKOY SSR in Russian Vol 26, No 1,
1977 pp 63-65

PEUSHA, HILMA, PRIYLINN, OSKAR, and SHNAIDER, TAMARA, Institute of Ex-
perimental Biology, Estonian SSR Academy of Sciences

[Abstract] Wheat leaf rust (*Puccinia recondita* f. sp. Rob. ex. Des.) is among the most widespread and harmful wheat pests. In seeking the genes responsible for resistance to this disease, the authors analyzed the virulence of a local wheat leaf rust population whose inocule was collected from wild and cultivated cereals near the settlement of Kharku, Khar'yuskiy Rayon, Estonian SSR, in the summer of 1975. It was found that of the 30 clones of the local population, 25 were universally virulent, and three clones had dominant alleles R10 and R3d, and two clones--dominant alleles P3a and P1. Also phytopathologically analyzed was resistance in several spring wheat mutants isolated from the Norrena variety after treatment with chemical mutagens. Seven mutants were rated for resistance to the disease using differentiators--seedlings of isogenic strains of the Thatcher variety. Two mutants bore four wheat leaf rust resistance genes each, and the rest of the mutants--none. Table 1; References 13: 11 Russian, 2 Western.

USSR

UDC 57; 578.08

RESULTS AND GOALS OF BIOLOGICAL RESEARCH ON ADVANCES IN AGRICULTURE IN
LIGHT OF THE RESOLUTIONS OF THE 25TH CPSU CONGRESS

Tallinn IZVESTIYA AKADEMII NAUK ESTONSKOY SSR in Russian Vol 26, No 1,
1977 pp 3-14

PRIYLINN, OSKAR, Institute of Experimental Biology, Estonian SSR Academy
of Sciences

[Abstract] As mandated by the 25th CPSU Congress, Soviet agriculture is called on to rely on fundamental science in clarifying the role of growth and developmental principles of plants and animals. Farm output in kolkhozes and sovkhoses of Estonian SSR is said to have risen 25 percent since 1970, and labor productivity--by 33 percent. In induced mutagenesis, a way was found to display rarely manifested latent and hereditary changes by additional presowing treatment of the seeds of plants subjected to

mutagenetic action, or presowing treatment of their progeny with biologically active agents. The specificity of chemical mutagenesis in agricultural plants is under study at the Institute of Experimental Biology, Estonian SSR Academy of Sciences. Also investigated at the institute is photosynthesis and metabolism of agricultural plants. Changes in the intensity and quality of light received by plants were shown to be accompanied by major shifts in both the total rapidity of CO₂ uptake, and the rate of biosynthetic pathways leading to the forming of photosynthetic products. Light is shown thus to be more than just an energy source, but also a reaction rate regulator. Top-dressing with CO₂ in tomato plantings was put into practice at the Saue Model Vegetable Sovkhoz in 1974. In spite of favorable potato-growing conditions in Estonia, the shortfall in the potato yield, due to viral diseases, was 15-20 percent. Causative agents of the potato mosaic disease are under study. In most cases viral infection was shown to be not expressed in a syndrome (without visible signs). It is assumed that all cultivated potato varieties are host to this virus and the problem of raising virus-resistant varieties amounts to the problem of securing truly virus-free parental stocks. Also under investigation is quantitative soil bacteria dynamics, actinomycetes, fungi and algae. The dynamics was found not seasonal in character, but to change with other specific factors. In animal husbandry, converting livestock raising to a production line basis necessitates studying how new ecological and other factors bear on growth and development. Feed formulations based on starter-concentrates are in wide use in hog-raising. Higher protein levels were found essential in faster growth rates and in alleviating protein hunger in broiler chickens. Improved coordination between Estonian and union-wide research programs is urged. References 47: 33 Russian, 9 Estonian, 5 Western.

USSR

UDC 595.762:631.153.3

THE GROUND BEETLES OF THE CARABIDAE FAMILY - INHABITANTS OF FODDER CROP ROTATION FIELDS

Moscow DOKLADY VASKhNIL in Russian No 1, Jan 77 pp 21-22

KARAVYANSKIY, N. S., doctor of agricultural sciences; and BLINOVA, V. P., candidate of agricultural sciences; All-Union Scientific Research Institute of Fodder imeni V. R. Vil'yams. (Submitted by Corresponding Member of VASKhNIL P. I. Susidko)

[Abstract] In 1971-1974 the authors investigated the specific, quantitative and seasonal dynamics of carabidans on the fodder-crop rotation fields. They have found that this family is represented by 21 genera and 50 species. In the fodder beet, winter wheat and barley sowings and in perennial grasses the following genera: Bembidion (5 species), Ophonus, Clivina,

Pterostichus (7 species), Harpalus (3 species), Calathus (3 species), Amara (8 species), Loricera, Agonum (4 species), and others, were predominant. Their quantitative percentage is given. By the nature of their feeding habits they may be divided into three trophic groups: obligate predators (Calosoma, Carabus), chiefly zoophagans (Bembidion, Pterostichus, Agonum, Synuchus, Calathus, and others), and predominantly phytophagans (Ophonus, Harpalus and Amara). The carabidans abounded most in June and July. Figure 1; References 3 (Russian).

USSR

UDC 633.11."324":631.432.24

FROST RESISTANCE AND PRODUCTIVITY OF WINTER WHEAT IN RELATION TO AUTUMNAL DEFICIENCY OF MOISTURE IN THE SOIL

Moscow DOKLADY VASKhNIL in Russian No 1, Jan 77 pp 3-5

BONDARENKO, V. I., doctor of agricultural sciences, and ARTYUKH, A. D., candidate of agricultural sciences; All-Union Scientific Research Institute of Corn. (Submitted by Corresponding Member of VASKhNIL P. I. Susidko)

[Abstract] The greenhouse and field experiments carried out at the experimental farm of the All-Union Scientific Research Institute of Corn in 1973-1974, 1974-1975 and 1975-1976 have shown that a sharp deficit of moisture in the soil exerts an adverse effect on the frost resistance of winter wheat. The harmful effect is much greater the longer the period of time the plants have been in the wilted state. The wilting of plants in the early stage of development is less harmful than at the later stage. Depending on the duration and time of wilting the productivity of plants decreases by a factor of 0.8-3.1 and the harvest of winter wheat dwindles by a factor of 1.3-4.2. Tables 5; References 6 (Russian).

USSR

UDC 632.937

BIOMETHODS - ON EVERY FOURTH HECTARE

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 pp 12-14

BELOV, V. K., chief of the Main Administration for Plant Protection, Ministry of Agriculture RSFSR

[Abstract] The development of biological control in the RSFSR during the Ninth Five-Year Plan is surveyed and future goals are examined. There

are 39 laboratories where 565 specialists are working. In 1975 the RSFSR Ministry of Agriculture created a production-scientific council for biological methods of plant protection. The area protected by these methods has increased from 0.5 million hectares in 1971 to 5.3 million hectares in 1975 and hothouse and covered ground area so protected has increased from 1.9 to 12.3 million square meters. The work of some institutes is outlined. An agent to fight root rot in cucumbers has been recommended, but its industrial production has not been developed and laboratories must produce it by primitive methods. The first laboratory for introducing integrated biological control was set up at the "Belaya Dacha" Hothouse Combine in Moscow Oblast' in 1975 to service all hothouse operations of the Vesna firm. As this is an important problem, a larger circle of research and production workers should be engaged in it. The basic biological agents used to protect industrial crops and produce are trichograms. These insect egg eating organisms are now used on 1.3 million hectares in the RSFSR. The obsolete equipment used in their propagation has been replaced by automatic lines. During the Tenth Five-Year Plan, it is planned to expand their use to four million hectares. The USSR Ministry of Agriculture is now faced with the problem of improving the standard design of a biological factory for the mass propagation of trichograms developed by the All-Union Institute of Plant Protection and the Agropribor Scientific Production Association. This system is briefly described. Biological laboratories have discovered and propagated local forms of entomophages. These are now widely used. Some of these are described. Farms in the republic are introducing biological methods to fight rodents. The preparation developed is used on 50 percent of all areas protected. The facilities of Glavmicrobioprom [Main Administration for the Microbiological Industry] are now producing bacterial rodenticides. However, production volume is insignificant and the cost is too high. Ten laboratories of plant protection stations and interkolkhoz associations now produce 23 percent of all such preparations delivered. Specialists in Krasnodar Kray have shown especially great initiative in this regard. The protection of field entomofauna is of great importance in biological protection. Data on field insect surveys show that during 1971-1975 it was possible to abolish chemical treatment of 4,937,000 hectares (84 percent of which was planted to grain). Scientifically based criteria for ending chemical treatment are being developed. Glavbioprom has unfortunately not rapidly introduced the production of fungal biopreparations. There are still shortcomings in the organization of biological control. These include insufficiently trained personnel, not enough emphasis on local forms of trichograms, poor operational control, and failure to utilize proper techniques. Scientific research institutions play an important role in expanding and improving biological methods. So far, however, their help has not been sufficient. Individual scientists or small groups are working on restricted projects. There is not enough basic research, and coordination is lacking. The main institution, the All-Union Scientific Research Institute of Biological Methods for Plant Protection, is still young and it should rapidly move from a zonal to a national level, becoming the coordinator and leader of this research. The main task of scientists

is to refine the technology for using trichograms. A number of pressing problems are being worked upon too slowly, for example, the industrial production of boverin. Years of testing have been carried out and agriculture still does not have this preparation available. The widespread use of bacterial rodenticides makes it necessary to study the relationship between host and parasite. Other problems are mentioned. The protection of agricultural plants from harmful organisms should be based on an integrated system using various measures. During 1977 in the RSFSR it will be necessary to use biological methods to protect six million hectares of field crops and 14.3 million square meters of covered ground. By the end of the Tenth Five-Year Plan these figures will reach nine million and 16 million square meters respectively, in other words, one out of every four hectares.

USSR

UDC 632.938.1:633.11

RESISTANCE ON WINTER WHEAT TO EURYGASTER

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 pp 23-24

SUSIDKO, P. I., VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin] corresponding member, FED'KO, I. A., candidate of biological sciences

[Abstract] The eurygaster is one of the most harmful insects of the 200 species which damage winter wheat in the steppes of the Ukraine. During 1968-1975 tests of the resistance of various varieties of winter wheat to eurygaster (*Eurygaster intergriceps*) were carried out on the experimental farm of the All-Union Scientific Institute for Corn. Sixty-six varieties of domestic and foreign winter wheat were tested. The plants were covered with gauze and a fixed number of insects were placed in the test sections. In addition, individual heads of wheat were covered with gauze after five insects of a specified age were placed upon them. The insects and larvae remained until the wheat had completely ripened. The experiments indicated that awned wheat (Stepnyachko 30, Stepova, Osetinskaya 3, and others) was only 13 percent damaged; awnless (Bezostaya 1, Mironovaksya 808, Avrora, Kavkaz, and others) were 20 percent damaged, and durum wheat was damaged more than soft (39 percent compared to 20 percent). The insects did less damage to varieties with a shorter growing season. Wheat varieties from experimental institutions in the Ukrainian steppes suffered less from the eurygaster than foreign varieties. For example, several Odesskaya and Dneprovskaya varieties did not receive more than 23 percent damage, while many American, Canadian, Yugoslavian, Australian, and other varieties received up to 64 percent damage. This is probably because of local environmental factors. It was established that adult insects do more damage than larvae. Chemical analysis indicated that varieties containing

lower total amounts of sugar during the period under consideration received less damage. Anatomical-morphological and biochemical factors are probably the reasons for differences in various varieties' resistance. Table 1.

USSR

UDC 632.931:633.16

AGROTECHNICAL METHODS AGAINST BARLEY DISEASES

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 p 24

MACHUZHENKO, V. I., Head of Odessa Plant Protection Station

[Abstract] Barley is planted on more than 200,000 hectares in Odessa Oblast' and yields have been 32.5 quintals per hectare for winter barley and 23.2 for spring barley. Further increases in the production of this crop are hindered by various fungal diseases. During 1971-1975, losses were as follows: for 0.5 percent infected plants - 1.9 quintals per hectare, 2 percent infected plants - 3.2 quintals, and for up to 5 percent infected plants 3.7 quintals per hectare. Mealy mildew causes damage, sometimes infecting up to 70-100 of the plants during heading and milky ripeness. It was shown that these diseases are more intensive when crops were planted more densely. Mildew develops differently on various varieties. On the Odesskaya-46 it is more intensive during the fall and in the milky ripeness stage, while on Orion (winter) this stage is prior to heading. The fungi winter on crop residues, therefore locating spring crops near winter crops increases disease development. Because of this, various agronomic measures, especially the time of planting, are important. Earlier plantings of winter barley were damaged more intensively, especially when following winter wheat. A table gives data on this. Crop rotation is an important way of preventing root rots. The healthiest rotations are: sugar beets - corn; sugar beets - sunflowers; sugar beets - barley; winter wheat - melons.

USSR

UDC 632.4/.937.15

BACTERIA FOR PROTECTION FROM ENGENIC DECAY OF GRAPES

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 p 26

KADYMOVA, Z. M., candidate of biological sciences, and KYAZIMOVA, SH. D., junior scientific worker, AzIZR [Azerbaijdzhan Institute for Plant Protection]

[Abstract] In years favorable for its development the engenic decay of grapes, caused by Botrytis cinerea, inflicts tremendous damage, sometimes

destroying 60-80 percent of the harvest. There are also losses during storage. A number of bacteria which are antagonists to the fungi were selected from soils in the Kirovabad - Kazakh zone. The method of agar blocks was used to determine the antibiotic activity of the bacteria selected. The system of N. S. Yegorov (1969) was used. Of the five solid agar media the greatest area on which no fungi grew was observed from bacteria-21 raised in wort agar and in meat-peptone agar. To determine antibiotic activity of bacteria with respect to the fungi, they were introduced at various times. Observations were carried out for 20 days after incubation at 26-27 degrees. Bacteria with high antibiotic activity were tested in field conditions. Grapes were treated with culture liquids containing bacteria B-1, 21, and 95. These bacteria markedly reduced damage to grapes caused by engenic decay. In 1974, when the infection of plants reached 57 percent and the intensity of disease development was 22 percent, vineyards which had been treated with B-1 and 95 were only 26-33 percent damaged by engenic decay and disease development intensity was 10-18 percent. In 1975 the Kirovobadskiy Sovkhoz treated 2.8 hectares with bacteria 95 and infection was reduced from 17 to 4 percent and disease intensity from 6 to 1 percent.

USSR

UDC 632.954

HERBICIDES AND CROP ROTATIONS

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 p 25

BEZUGLOV, V. G., and POSTOYEVA, R. A., candidates of agricultural science

[Abstract] During 1972-1975 the efficiency of groups of herbicides applied sequentially to all four crops in four field crop rotations were tested at Kuntsevskaya Poultry Factory in Moscow Oblast'. The soil was soddy podzolic sandy loam. The crops were potatoes, barley, lupin, and winter rye. Five groups of herbicides were tested. The majority of the herbicides were applied during sprouting. Weather conditions were very diverse. Young weeds predominated in the fields; hemp nettle, violets, black bind weed, and others. Weed content varied greatly. For example, when potatoes were the first crop there were 428 weeds per square meter, while in the subsequent crop (winter wheat) the figure was 22. Crop rotation plays some role here. Moisture conditions during the spring period were of major importance. The various combinations had a different effect. The most effective was the third combination: simazene + prometrene applied to potatoes and 2M - 4Kh + dikamb to barley, simazene to lupin and dikamb to winter rye. This combination killed 76 percent of the weeds. It was shown that a three year application of various combinations to sandy soil did not have effects on weeds when the fourth year crop was planted. There were no reductions in crop yields for any of the combinations and some (lupin) even increased.

VITAVAKS

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 pp 37-38

ANDREYEVA, YE. I., doctor of agricultural sciences

[Abstract] The active ingredients of vitavaks consist of two crystal structures, A and B, with similar fungicidal activity but different melting points. Its lethal dose is 3,200 milligrams per kilogram when given orally to rats. Rats given 100, 200 and 600 milligrams per kilogram for a long period had no pathological changes. It is 1,000 times less toxic than DDT and 10-100 times less toxic to perch and rainbow trout. Having low toxicity for warm blooded animals, fish, and other vertebrates, it has a very high specific activity against a number of pathogenic fungi. It can suppress the growth of various basidial fungi in doses as low as 8 mg per liter. At concentrations of 33 mg per liter it kills 50 percent of some classes of fungi. Its basic use is to treat seeds for loose smut of wheat and barley. Widespread research indicates that its activity depends upon seed quality, degree of infestation, method of treating grain, content of substance in the preparation, and other factors. For example, if there is a high degree of infestation, the dry treatment method with a 50 percent preparation will have no effect, and only higher doses, 3-4 grams per kilogram, will completely eliminate loose smut if seeds are more than 60 percent infested. The best treatment method is described and the fungi against which it is most effective are named. It does not have an effect on some species (*Fusarium moniliforme*, *F. gibosum*). Several preparations using vitavaks and inorganic mercury substances are used. One reason for using combined preparations is to eliminate the possibility of resistance arising in pathogens. Research has shown that *Ustilago tritici* and *Tilletia tritici* can develop resistance in the seventh generation and increase up to the 14th generation. This can be eliminated by mixing vitavaks with TMTD. It and its mixtures have no effect on sprouting even if the seeds are treated just before planting or two-three months prior to planting. However, if only vitavaks is used, mold develops and it is better to use mixtures if the seeds are treated a long time prior to planting. The systemic effects of this substance are briefly discussed. Seven days after planting only 50 percent of the chemical remains in the soil; after 14 days it completely disappears. Prolonged tests (three-four years) of its constant use on wheat show that residual quantities amounted to 0.15-0.8 milligrams per kilogram of green mass at the beginning of ripening and by the milky ripeness stage it had disappeared completely. It has a local systemic effect and suppresses loose smut at the beginning of seed germination. Consequently, residuals have practically disappeared by harvest time. No negative effects on the taste and baking qualities of flour were noted. Several firms manufacture it and it is used throughout the world. Since there are still insufficient quantities of it in the USSR, it is advisable to use thermal treatment for smut.

POTATO NEMATODE IN PRIMORSKIY KRAY

Moscow ZASHCHITA RASTENIY in Russian No 1, Jan 77 pp 56-57

LEBEDEVA, D. V., helminthologist, Primorskaya Quarantine Station

[Abstract] Potato nematodes were discovered in private plots near Nakhodka in 1969. Research showed that the parasite was found on 2,576 hectares in 14 rayons in various climatic and soil zones. There are several reasons for their spread: continuous planting of crops, purchase and transportation of potatoes between regions, and heavy rains leading to flooding. In 1971 research was begun on the bioecological characteristics of nematodes using varieties of potatoes brought into the region. The research also covered the influence of agronomic and chemical methods of fighting the parasite. The sharp changes in temperature and the unequal distribution of rainfall in the region have a great influence on the parasite's development. About 27 days after potato planting, young cysts appear on the roots and are mature after 7 days. In hot weather this process is speeded up considerably (20 and 30 days respectively). Infected plants suffer from a shortage of water. It takes an average of 50 days for the development of a generation of nematodes. The larvae come out of the winter cysts in May and damage plant roots until August. The dimensions of the eggs, pupae and adults are given. Nineteen regionalized varieties of potatoes were tested for resistance. The number of cysts per centimeter of root ranged from 0.05 for the Priyekul'skiy early variety through 0.35 for the Vostok, up to 0.52 for the Mira variety. In 1972 the station produced 11 nematode-resistant varieties having about 0.06 cysts per cm of root. Best results in fighting the parasite were obtained by planting resistant varieties and using chemical treatment with carbation and subsequently raising grain crops for 2 years. In 5 years the soil infestation was reduced by 98.7 percent. The raising of only resistant varieties of potatoes did not clear out the soil, and, in addition there was the danger of creating aggressive races of the parasite; the number of cysts was reduced by 30 percent. When receptive varieties of potatoes were planted 3 years in succession there was a sharp increase in cysts, and under laboratory conditions optimal for infestation the increase was even greater. In field conditions the number of cysts increases very slowly.

SCIENCE AND AGRICULTURE

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 pp 5-17

MUROMTSEV, G. S., All-Union Academy of Agricultural Sciences imeni
V. I. Lenin (VASKhNIL)

[Text] [English abstract provided by the source, modified] The 25th CPSU Congress paid much attention to the further development of agriculture, allocating 172 billion rubles for capital investments in agriculture in the Tenth Five-Year period as against a total of 320 billion rubles previously invested. Those resources will be used in a concentrated manner and allocated primarily to mechanization of labor, use of chemicals in agriculture and land reclamation. Science has an especially important role in the accomplishment of these tasks. Our scientists face great tasks in plant breeding and seed production. To improve efficiency, the VASKhNIL has established 38 plant selection centers at which plant varieties are being intensively bred in the course of research being done with the participation of specialists from various fields of science. We need early maturing varieties of high-quality seeds for Siberia as well as drought-resistant varieties able to consume water economically for seed formation. Seed production of sugar beets, sorghum and some other crops leaves much to be desired as yet. Increase of the efficiency of agricultural chemicals is a major problem. Up to now, nitrogen fertilizers have been only 50-60% utilized by plants, and not more than 20-25% of phosphorus fertilizers. At the same time, organic fertilizers continue to play their large role while obtaining important new functions in intensifying agriculture, that is, improving physical and physicochemical soil qualities and performing anti-phytopathogenic functions. Increase of grain production remains one of the main targets in the Tenth Five-Year period. An important problem is stabilization of agriculture and minimizing its dependence on weather conditions. Large zones of guaranteed grain production are being arranged in the areas of adequate rainfall as well as on irrigated lands. Other important problems are the prevention of soil erosion, introduction of new specialized crop rotations and increase of plant resistance to soil infections. In increasing the livestock production the general line is use of industrial technology, and a very important question is the optimal size of industrial livestock farms. It must be resolved by the joint efforts of economists, zootechnologists, veterinaries, agronomists, zoologists, etc. The general line in the further development of agriculture for the coming years is specialization and concentration of production on the basis of inter-farm cooperation and agricultural and industrial integration. These new forms of agricultural production are, in fact, a further elaboration of Lenin's cooperative plan as seen under the conditions of the developed socialist system. All this presents grand targets indeed to be faced by our science of agriculture and the economy.

USSR

UDC 632.4

CONDITIONS OF FORMATION OF INFECTION STRUCTURES OF PUCCINIA graminis f. sp. tritici IN VITRO

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 26 Jan 76 pp 90-94

PLOTNIKOVA, YU. M., ANDREYEV, L. N., SEREZHKINA, G. V., and ZAYTSEVA, L. G.,
Main Botanical Garden, Academy of Sciences USSR, Moscow

[Text] [Russian abstract provided by the source, modified] The influence of environmental factors (the heat shock temperature, the uredospores storage time and the quality of the incubation medium) on the formation of infection structures of Puccinia graminia f. sp. tritici in vitro was studied. Deviation of the heat shock temperature by 1 or 2° from the optimum caused a sharp reduction in the number of complete infection structures formed. When the temperature was lowered (28-29°), 90% of the germinated uredospores formed small appressoria with lateral outgrowths. At a higher temperature (31-32°) large appressoria formed, more than half of which ceased to develop and the rest formed infection structures. When the uredospores were stored for a month at 4° the intensity of their germination dropped by a factor of 1.5-2. The incubation period had no determining influence on the number of infection structures formed: during germination of uredospores in the form of a suspension in a buffer and on the surface of agar the number of infection structures was practically identical. There was discussion of the use of the lability of infection structures under the influence of external effects for the development of methods of regulating the development of the agent causing rust before it penetrates the tissues of the host plant. Figures 4; Tables 3; References 7: 4 Russian, 3 Western.

USSR

UDC 631.4

PESTICIDE AFTEREFFECTS AND PREDICTION OF CONTAMINATION OF AREAS BY THEIR RESIDUES

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 2 Nov 75 pp 120-124

KOVDA, V. A., GLAZOVSKAYA, M. A., SOKOLOV, M. S., and STREKOZOV, B. P.,
Institute of Agricultural Chemistry and Soil Science, Academy of Sciences USSR, Pushchino-on-Oka, and Moscow State University imeni M. V. Lomonosov

[Abstract] (One of the reports presented at a plenary session of participants in the Soviet-American Project "The Form and Mechanisms of Migration

of Pesticides and Chemicals," Moscow, 15 Jul 75). Because pesticide use will increase considerably in the very near future it is necessary to designate regions in which effective measures against contamination of the environment by pesticide residues will soon be necessary. The following four forms of stages of pesticide aftereffect have been distinguished: I - local and direct effect on objects and accompanying effect on organisms, soil and water; II - near-term, regional-landscape effect, different on various kinds of terrain; III - remote regional-basin aftereffect, and IV - very remote, global aftereffect. The proposed method of prediction of contamination includes the following four stages: 1 - designation of the most dangerous pesticides from the total assortment; 2 - determination of the standard doses for all types of pesticides (the total mass in kg used annually in a given region per hectare of arable land); 3 - compilation of a map of potential contamination by pesticide residues of the agricultural land of a region; 3 - estimation of the state of contamination of the region as a whole, forecasting the aftereffects and making recommendations regarding the possible negative aftereffects of contamination by pesticides. Figure 1 (a map); References: 5 Russian.

USSR

UDC 577.1 576.8

DYNAMICS OF PYRIDINE NUCLEOTIDE CO-ENZYMES IN NOCARDIA CELLS

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 19 Dec 75 pp 82-89

YEROSHINA, N. V., GOLOVLEV, YE. L., and SKRYABIN, G. K., Institute of
Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences,
Pushchino

[Text] [Russian abstract provided by the source, modified] The dynamics of oxidized and reduced forms of pyridine nucleotides were studied in cells of a culture of *Nocardia* sp. B-293 under different physiological conditions in connection with ability to oxidize 3-methylpyridine into nicotinic acid. The obtained data testify to important distinctive features of the culture in comparison with nontransforming *Nocardia* and other microorganisms described in the literature and belonging to other taxonomic groups. Characteristic of B-293 are a high ratio of reduced to oxidized forms, a low diphosphopyridine to triphosphopyridine nucleotides ration and a higher summary level of cofactors. Figures 2; Tables 2; References 22: 4 Russian, 18 Western.

USSR

INHIBITION OF THE AGING PROCESS IN LABORATORY MICE BY 2-ETHYL-6-METHYL-3-HYDROXYPYRIDINE HYDROCHLORIDE

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 17 Jul 75 pp 32-36

EMANUEL', N. M., OBUKHOVA, L. K., SMIRNOV, L. D., and BUNTO, T. V.,
Institute of Chemical Physics, USSR Academy of Sciences, Moscow

[Abstract] A study was made of the influence on the survival of non-linear SHK mice of 2-ethyl-6-methyl-3-hydroxypyridine, an inhibitor of radical reactions, which has radioprotective and antioxidant properties. Inhibition of the aging of test animals was established, manifested in increase of the average and maximal length of life of 13-58%. The introduction of a new class of geroprotectors -- nontoxic, water-soluble alkyl-derivatives of 3-hydroxypyridine (structural analogs of vitamin B₆) -- into experimental gerontology is promising for further study and possibly clinical investigation. References 21: 11 Russian, 10 Western.

USSR

UDC 577.3

EFFECT OF PERMANENT MAGNETIC FIELDS ON PROTEIN SOLUTIONS

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 29 Mar 74 pp 44-53

ARISTARKHOV, V. M., PIRUZYAN, L. A., and TSYBYSHEV, V. P., Institute of
Chemical Physics, USSR Academy of Sciences, Moscow

[Abstract] The effect of a permanent magnetic field with an intensity of 5200 Oe on the ascitic fluid of a sarcoma-37 tumor was investigated with respect to such characteristics as the antihemolytic property, the degree of different protein fractions. In addition, the kinetics of the effect of a permanent magnetic field on solutions of bovine serum albumin was investigated at different intensities and exposures. The following were noted as a result of the effect of the field: decrease of the bonding of Fe^{2+} with the ascitic fluid and of the antihemolytic property of the ascitic fluid, change in the mobility of different ascitic fluid fractions and increase of the intensity of absorption of albumin solutions in the region of wavelengths of 250-320 nm. On the basis of the obtained data it is concluded that protein association increases in a permanent magnetic field. Figures 8; Tables 2; References 17: 9 Russian, 8 Western.

USSR

UDC 616-073.75:658.53

STANDARDIZATION OF THE WORK LOAD OF X-RAY PERSONNEL

Moscow VESTNIK RENTGENOLOGII I RADIOLOGII in Russian No 6, 1976 pp 70-74

VIKTURINA, V. P., GORELOVA, L. N., and POLYANSKAYA, Z. M., Moscow

[Abstract] Based on their own time-motion studies and published data, the authors determined the average amount of time and radiation exposure required to perform 61 different roentgenographic examinations, and calculated "coefficients of arbitrary roentgenographic units" accordingly. The coefficients also reflect differences in the expenditure of time and the radiation dose received between the radiologist and the technician, e. g., interpretation and description of the films by the former and positioning of the patient by the latter. The maximum number of times the various procedures should be done in a week is also indicated. For example, fluoroscopy of the stomach requires 20 minutes of the physician's time and 15 minutes of the technicians time, with coefficients of arbitrary roentgenographic units of 3 and 2, respectively, whereas roentgenkymography of the heart requires 30 and 20 minutes with coefficients of arbitrary roentgenographic units of 4 and 3, respectively. Table 1; References 11 (Russian).

IMPROVING THE QUALITY OF TEACHING OF ROENTGENOLOGY IN MEDICAL SCHOOLS

Moscow VERTNIK RENTGENOLOGII I RADIOLOGII in Russian No 6, 1976 pp 78-79

KHOMYAKOV, YU. S., ZUBCHUK, N. V., and KAGAN, YU. L., Second Moscow Medical Institute imeni N. I. Pirogov

[Abstract] Roentgenology is currently taught in most medical schools without differentiation of the subject matter into general and specific. Such differentiation is essential for training competent versatile roentgenologists. It is therefore proposed that the curriculum be divided into two major parts. The first should include the history of the science as a whole, development and achievements of Soviet roentgenology, equipment and organization of X-ray rooms, basic methods of roentgenographic examination, principles of obtaining and analyzing roentgenograms, roentgen anatomy and roentgen physiology of the main organs and systems, and radiation safety of patients and medical personnel. The second or specific part should focus on the diagnosis of diseases of the various organs and systems, roentgen diagnosis in pediatrics, obstetrics, etc. The general part is best presented in the first 2 years of study. The specific part must wait until the students are familiar with pathological anatomy and physiology, symptoms of diseases, and problems of differential diagnosis. Figure 1.

USSR

UDC 576.895.4

SPECIES COMPOSITION OF BIRD TICKS IN TURKMENISTAN

Ashkhabad IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR in Russian No 5, 1976
signed to press 24 May 76 pp 40-46

SHCHERBININA, O. KH., Institute of Zoology Academy of Sciences Turkmen SSR

[Abstract] The author notes that migrations of tick-infested birds can contribute to spread of arboviruses and potential outbreaks of encephalites and hemorrhagic fevers. He has collected ticks from birds, from 1965 to 1975, in various areas of Turkmenia--Kara-Kalinsk, Kyzyl-Arvat, Bakharden, Geok-Tepinsk, Ashkhabad, Kaakhsinsk, Tedzhensk, Maryysk, Iolotansk, Charshanginsk, and Kerkinsk. He examined 2029 birds, which belonged to 151 species. Forty species harbored ticks. Four argas species (*A. vulgaris*, *A. hermanni*, *A. persicus* and *Ornithodoros concinax*), six ixodid (*I. eldaricus*, *I. subterraneus*, *I. frontalis*, *Hyalomma plumbeum*, *H. a. asiaticum*, and *Haemaphysalis sulcata*) and one gamasid (*Haemolaelaps longipes*), parasitized the birds. Specific bird parasites are *A. vulgaris*, *A. hermanni*, *A. persicus*, *Ornithodoros concinax*, *I. eldaricus*, *I. subterraneus*, and *I. frontalis*. The ticks *Hyalomma a. asiaticum* and *Haemolaelaps longipes* which are specific parasites of mammals, parasitize birds and mammals. Tables 2; References 24: 23 Russian, 1 Western.

USSR

UDC 628.113.2:547.63

USE OF LASER LOCATION OF THE ATMOSPHERE FOR ESTABLISHING SANITARY-PROTECTIVE ZONES OF INDUSTRIAL ENTERPRISES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
19 Apr 76 pp 102-103

MELUA, A. I., Scientific Research and Design Institute for Development of General Plans and Designs for City Housing Systems, Leningrad

[Abstract] Defining sanitary-protective zones is accomplished by examination of enterprises and the sources of pollution, and study of the quality of the air basin in the environs of an enterprise (air sampling). However, zone boundaries determined in this way are rather approximate. Microphysiological tests don't permit gaging concentrations of pollution in large or difficulty-accessible ranges. Long distance methods of study are needed, and laser location appears to be a promising technique to fit this need. The author describes the principle of a laser locator--lidar--and suggests that it would be helpful in predicting environmental conditions around enterprises, in producing a three-dimensional picture of the atmosphere, and in indicating need for cutting down polluting discharges. Figure 1; no references.

USSR

UDC 628.315:619

SEWAGE SYSTEMS OF VETERINARY ESTABLISHMENTS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
25 May 76 pp 98-100

GONCHARUK, YE. I., professor, DUCHINSKIY, V. M., candidate of medical sciences, and FEDOSENKO, N. G., Kiev Oblast Sanepid Station

[Abstract] According to "Norms for technological design of veterinary sites" (NTP-SKh 8-67), methods for purification of their sewage water are set up by organs of the State Sanitary Inspectorate for each site, separately, depending on local conditions. Veterinary sites pose difficulties due to absence of hygienically-based design solutions and recommendations for sanitizing wastes from such sites. Up to 1971, the Ukraine used cesspools for them, creating danger to the environment. In the absence of available data, the authors have been assaying (1971-1975) qualitative and quantitative composition of site wastes, in order to select effective purification units. Data are presented in a Table. The authors found that installations which employed biofilters with block inserts of foam glass, and factory-manufactured compact devices

types KU and BIO, with subsequent purification of sewage in filtration-concentration wells and ditches, were efficient purification systems. The sanitary-hygienic basis for use and exploitation of the installations has been supplied by the Department of Communal Hygiene, Kiev Medical Institute (Goncharuk and V. F. Gayduk). Table 1; References 2 (Russian).

USSR

UDC 628.312:547.391.1

SEPARATE DETERMINATION OF ACRYLIC AND METACRYLIC ACIDS IN WATER BY PAPER CHROMATOGRAPHY

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
11 May 76 pp 78-80

YEKHNINA, R. S., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

[Abstract] The subject compounds are found in sewage from acrylate production plants. Maximum permissible level for acrylic acid is 0.5 mg/l, for metacrylic acid, 1 mg/l. Control of their levels in water basins is based on the toxicity of each and a separate assay of each in reservoirs and in effluent waters (for content control) is necessary. The author used a paper chromatography method of individual assay (adapted from Fink and Fink, and others), converting the acids to sodium salts, extracting with butanol and chloroform, and esterifying with ethylene glycol; the hydroxam derivatives are colored with trivalent iron. Chromatography paper used was mark "C" (average) made by the Leningrad Factory imeni Volodarskiy. Butanol-acetic acid-water, 4:1:5, is the best for separation. The method was used for hygienic assay of biological purification of sewage from the Dzerzhinsk Chemical Combine "Orgsteklo." References 6: 3 Russian, 3 Western.

USSR

UDC 628.349:546.13

HYGIENIC PROBLEMS OF PURIFICATION OF WATER FROM TOXIC SUBSTANCES USING CHLORINE-CONTAINING PREPARATIONS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
13 Jul 76 pp 20-24

SHTANNIKOV, YE. V., professor, and MOROZOV, YA. M., candidate of medical sciences, Saratov Medical Institute

[Abstract] The authors present experimental results of purification of waters which had been contaminated with botulinum toxin, making use of

widely-available chemical reagents in water supply. Purification of botulinum toxin-containing water with chlorine-containing compounds has not been approved hygienically. They found that the basic factors which regulate the stability of the toxin are the physical chemical properties of the water; of these the most active are in alkaline medium (pH 10.0-11.0) and the color index. Dosages of chlorine needed to inactivate the toxin in water substantially exceed concentrations generally accepted in the practice of communal water supply; they amount, on the average, to 3-20 ml/l. The standard magnitude of residual chlorine, 0.3-0.5 mg/l, cannot be regarded in this case as a test of reliable purification and an increase should be considered (2.0-10 mg/l). The physical properties of the water (color index and turbidity) can be included in the factors which affect the processes of destruction of the poison. A direct association was seen between the quality of the water and the inactivating dose of chlorine. The active reaction of the water usually recorded in natural waters (5.5-9) has no essential influence on degree of inactivation of the toxin by the chlorine. Figure 1; References 5 (Russian).

USSR

UDC 613.34:628.165.087

SANITARY AND CHEMICAL ASSESSMENT OF DESALINATION OF MINERAL WATER OF THE SULFATE-CALCIUM GROUP BY ELECTRODIALYSIS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
10 Jun 76 pp 24-28

GORSHKOVA, YE. F., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

[Abstract] Study of the hygienic efficiency of electrodialysis desalination of hard sulfate-calcium water was carried out for several years by the Erisman institute. The partially completed electrodialyzing desalinators EOU-NIIPM-12 and the serially-issued EOU-NIIPM-25 (exploited in Gorkiy oblast since 1965) were used. Artesian well water with 2.3-2.5 g/l mineralization was used. The ion composition of these waters was unusual consisting predominantly of hard salts and little or almost no sodium or chlorides. Ca, Mg, sulfate and carbonate ion levels were almost up to the solubility of the corresponding salts. Hardness was 32-24 mg-equiv/l. To produce desalinated water of drinking quality, with respect to macroelement content, in the electrodialysis of these hard waters a more profound lowering (less than 1000 mg/l) of mineralization is required; necessary levels must in each concrete case be controlled according to the hardness index. A slightly specific odor was present in the water, indicating migration of insignificant amounts of organic substances from the ionite membrane; filtration of the water through activated charcoal is essential. Protracted use of electrodialysis was not accompanied by increase in organic substances due to membrane destruction. Use of desalination with electrodialysis will need preliminary softening of initially hard waters. Tables 2; References 9 (Russian).

ROMANIA

UDC 613.164

MEASUREMENT AND INTERPRETATION OF NOISE LEVEL IN INDUSTRIAL ENVIRONMENT

Bucharest VIATA MEDICALA in Romanian No 12, 1976 signed to press 16 May 76
pp 277-279

CHIVU, B., ANGHEL, Sofia, and NEGULESCU, Mariana, Labor Medicine Section,
Institute for Hygiene and Public Health, Bucharest

[Abstract] The operation principles of sonometers are briefly reviewed. The estimation of the impact of a sound environment involves determining the partial effects of the various noise levels which make up the environment and converting the partial effects into a resulting global effect expressed by the equivalent continuous level. The establishment of maximum allowable levels aims at ensuring auditory protection and avoiding the interference of attention by noise and, consequently, reduction of labor efficiency. The maximum level of 90 db is indicated for ensuring auditory protection. The levels of 80, 75, 60, and 50 db are indicated for avoiding the disturbing effect of noise on attention and apply to specific jobs characterized by concentration of attention. The practical approach to monitoring the regulations on limiting the exposure to noise in the industrial environment involves: recording the noise level on the job; determining the duration of action during an ordinary work day; converting the variable levels in terms of equivalent continuous level, in accordance with the methodology specified in standards; evaluating the degree of concentration of attention for the given situation; and comparing the level recorded with the maximum allowable level for the given situation.

USSR

UDC 613.483:546.49

STUDY OF MERCURY CONTAMINATION OF VARIOUS FABRICS TO ASSIST CHOICE OF MATERIALS FOR WORKING CLOTHING

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
1 Mar 76 pp 107-108

GOL'DSHTEYN, D. S., doctor of technical sciences, GAL'PERIN, G. B.,
RUMYANTSEVA, N. P., and CHICHASOV, G. M.

[Abstract] Fabric samples were immersed in liquid mercury containing Hg-203 isotope which permitted radiometric assay of contamination which was considered to be superior to available chemical analysis. Materials tested included linen, silk, cotton, polyester, sulfonics, cotton with lavsan, cotton with capron, lavsans, caprons, polypropylenes, and wools. The material which was selected as the most appropriate for workers with mercury was fabric 3509. It is described as cotton suiting; its mean mercury contamination was 4.2 mg/dm^2 . Finishing used is mercerized soft-dyed (blue and khaki) and mercerized bleached. It is said to be preferable to moleskin 3053. Fabric 3509 is recommended as basic material for manufacture of specialized clothes for mercury production. Table 1; References 1 (Russian).

USSR

UDC 615.917:632.95).07:616.127-008.9:577.16.087.4

MICROSPECTROPHOTOMETRIC ANALYSIS OF CERTAIN ENZYMES OF THE MYOCARDIUM OF ANIMALS AFFECTED BY THE PESTICIDE PREPARATION 275

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
8 Jun 76 pp 112-113

GULOVINA, N. B., Moscow Scientific Research Institute of Hygiene imeni
F. F. Erisman

[Abstract] Preparation 275 is Beta-aminoethyldithiocarbamic acid. The method used measured changes in optical density in toxicological assay of the pesticide which were taken to indicate shifts in activity of cardiac enzymes. The enzymes tested were succinate-, lactatedehydrogenases, and NAD-diaphorase in cardiac muscle under the influence of this pesticide. Experimental animals used were 150-180 g male white rats. Results showed lowering of succinatedehydrogenase and NAD-diaphorase in acute and chronic tests, which indicate depression of oxidative processes in the Krebs cycle. Succinatedehydrogenase was lowered even more. The method can be used to trace the dynamics of enzyme action as affected by the toxic agent, even at low doses. It is thus sensitive for measuring low intensity effects. References 4 (Russian).

SOME URGENT PROBLEMS IN THE ESTABLISHMENT OF HYGIENIC STANDARDS FOR
CARCINOGENIC SUBSTANCES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
23 Jun 76 pp 82-88

SIDORENKO, G. I., professor, academician of the Academy of Medical Sciences USSR, and LITVINOV, N. N., professor, Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] This is a review. Setting standards for blastomogenic chemical substances is said to be one of the most difficult in prophylactic medicine. Productive Soviet workers in this field are cited (R. Ye. Al'bert, N. N. Litvinov, S. V. Miller, L. M. Shabad, N. Ya. Yanysheva). The Ministry of Health was the first to establish maximum permissible levels (MPL) of the highly-active and widely-distributed carcinogenic hydrocarbon benz(a)-pyrene in the air of working places and the atmosphere. To protect the environment from carcinogens, specialists in the field must direct their efforts primarily to development of principles and of procedural bases to establish norms for such substances in the atmosphere, water, soil, air of working places, and in food products. Attention must be devoted to latent dangers, oncoviruses and oncornaviruses, induced changes in the genetic apparatus, summation, syncarcinogenesis, cocarcinogenesis, differences of sensitivities of man and animals, minimal effects, prolongation of action, and a broad program of establishment of MPLs. Not all potential carcinogenic substances have to be subjected to hygienic standardization: attention must be concentrated, primarily, on those carcinogens which--according to academician L. M. Shabad's classification--belong in first or second categories, that is, they present direct or potential danger to the health of the people and are most widespread in the environment. Their number is not so large, and they can serve as the basis for a cancer prophylaxis program. Theoretical research directed to establishing precise problem areas in toxico-oncology and oncohygiene will lead the way to standardization and appropriate prophylaxis against malignancies. References 38: 36 Russian, 2 Western.

USSR

UDC 614.72-074:547.28.06

GROUP DETERMINATION OF CARBONYL COMPOUNDS IN AIR

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
18 Jun 76 pp 63-65

DMITRIYEV, M. T., KITROSSKIY, N. A., and MASLENKOVSKIY, L. G., Institute of General and Communal Hygiene imeni A. N. Sysin, Moscow

[Abstract] Aldehydes and ketones readily react with 2,4,-dinitrophenylhydrazine to form the hydrazone derivatives. Each aldehyde or ketone forms its own hydrazone, but these all have a practically identical absorption spectrum. Propanal is selected as the standard carbonyl for assay of these compounds in air, using the hydrazone reaction. Trial runs showed that the carbonyl pollution factor of very clean natural air is 0.003-0.01 mg/m³; common city air, 0.05-0.1 mg/m³; and polluted air in the presence of photochemical reactions, 0.6-1.0 mg/m³. For polluted air of a site, the carbonyl factor is equal to 0.1-0.5 mg/m³, and for garages and transport tunnels, 0.5-2 mg/m³. The carbonyl factor for air exhaled by man is 8-12 mg/m³; for waste gases of diesel motors, 20-40 mg/m³; for benzine motors, 30-100 mg/m³. Reference 1 (Russian).

USSR

UDC 616-092.9-06:615.916:546.224-31

CHRONIC ACTION OF SULFUR DIOXIDE ON ANIMALS WITH REPRODUCED PATHOLOGICAL PROCESSES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
29 Apr 76 pp 11-15

CHIZHIKOV, V. A., candidate of medical sciences

[Text-Russian language abstract supplied by the author] Findings indicate that the resistance of animals with reproductions of the pathological processes of hepatitis, nephrosis, silicosis, and extended continuous exposures, was far less in comparison with that of healthy animals. Healthy animals manifested statistically reliable shifts in content of sulphydril groups, ratios of blood serum protein fractions, and osmotic resistance of erythrocytes, only under the action of concentrations at a level of 2.0 mg/m³. Concentrations of sulfur dioxide gas at a level of 0.5 mg/m³, in all control tests in healthy animals, had no effect. The animals with reproduced pathological processes were affected, with respect to a majority of the tests applied, by the three experimental concentrations. Difference between levels of active concentrations for the healthy (2.0 mg/m³) and sick (0.05 mg/m³) animals was, in our experiment, at a magnitude of forty-fold.

Although this magnitude is conditional and needs to be made precise, it can be reliably asserted that the difference between affecting or non-affecting concentrations for healthy and unhealthy animals was at the level of an entire order. The trend in the functional changes in the body of the weakened animals was the same as that in the healthy animals. The models of the pathological processes did not lead to manifestation of any essential peculiarities in the response reactions of the sick animal bodies to doses of sulfur dioxide. One basic pattern was clearly recorded for all of the models of pathological processes used in this experiment--this was an essential decrease in resistance of the weakened body to the action of a toxic factor. References 10: 6 Russian, 4 Western.

USSR

UDC 614.72-:616.24-091/-092-07

SOME RESULTS OF MORPHOFUNCTIONAL STUDY OF LUNGS IN A HYGIENIC ASSESSMENT OF ATMOSPHERIC POLLUTION

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
13 Apr 76 pp 15-20

BONASHEVSKAYA, T. I., Institute of General and Communal Hygiene imeni A. N. Sysin, Moscow

[Abstract] In the absence of extensive work on histological examination of lungs exposed to polluting organic vapors, the author has generalized her own experimental data from analysis of lungs of rats which had inhaled low concentrations of various hydrocarbon vapors (e.g., benzene, toluene, xylol, hexane-heptane, formaldehyde, chlorofos, trichloropropane, perchloroethylene, 4,4-diaminodiphenylsulfone, and dimethylacetamide). She summarizes her histological, histochemical, and histoenzymatic findings in the intrapulmonary air passages and respiratory sectors of the lungs which reveal a growing state of adaptation. One of the major links in the adaptation is an increase in plastic and oxidative potential in the epithelia of the bronchi, bronchioles, and respiratory portion, and an intensification of proliferative processes. The adaptive mechanism involves hyperplasia of the intracellular organelles and of the cells themselves. Injury reactions are mildly expressed and associated with more sensitive cellular structures. In response to atmospheric pollution the lung tissues apparently initiate defense by intensification of infiltrative processes in the pulmonary stroma, migration of fat cells, and reactive changes in the pleural mesothelium. Figures 2; References 9: 4 Russian, 5 Western.

USSR

UDC 596(599:632.93+502.7:596)599(573.5)

TOXIC CHEMICALS AND THEIR ACTION UPON POPULATIONS OF VERTEBRATES

Dushanbe IZVESTIYA AKADEMII NAUK TADZHIKSKOY SSR in Russian No 4,
Oct/Dec 76 signed to press 7 Mar 76 pp 58-61

SAPOZHNIKOV, G. N., BIDOS, V. S., KRAVTSOVA, N. I., and SELEZNEV, V. F.,
Academy of Sciences Tadzhik SSR

[Abstract] The authors discuss positive and negative aspects of pesticides and herbicides and the consequences of their use. Non-Soviet and Soviet (Kadochnikov, 1951; Soldatkin, 1960; Fedorenko, 1962; Voronova, Torina, Churkina, 1962) studies for controlled use of toxic agents are cited, and mention is made of the 23 May 72 Soviet-American agreement for cooperation in the protection of the environment. The authors' institute initiated study of the agricultural use of toxic chemicals in 1963. Effect of DDT on Tadzhik pheasants (*Phasianus Colchicus bianchii* But.), which cannot distinguish between contaminated or clean fodder, has been severe; pigeons and local hares (*Lepus tolaj* Pall.) are also affected. Hexachlorocyclohexane has also injured the pheasants; in general, the toxic chemicals exert damage to internal organs. The effect on vertebrates is not limited to areas of chemical application; a national park reservation "Tigrovaya balka" has become contaminated by bird migration; high mountain areas at least 100-150 km away from processed lands have been found to have traces of pesticides. Ecosystems are endangered worldwide by uncontrolled use of toxic chemicals. References 12 (Russian).

USSR

UDC 613.6:621.365.414

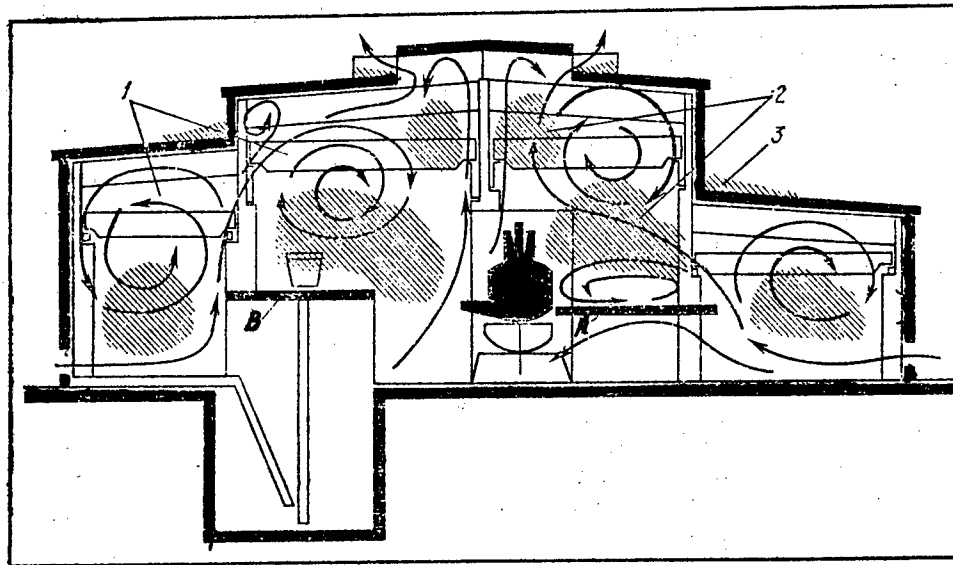
HYGIENIC EVALUATION OF THE CONDITIONS OF LABOR IN MODERN ELECTRIC STEEL-
MAKING SHOPS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2,
Feb 77 signed to press 25 Feb 76 pp 1-4

SOLOV'YEV, V. A., MEDVEDEVA, YE. F., KUCHERSKIY, R. A., ISTOMIN, B. S., and
FINOGENOV, A. I., Institute of Labor Hygiene and Occupational Diseases,
Academy of Medical Sciences USSR, Institute of Commercial Buildings, State
Construction Commission, USSR

[Abstract] Hygienic studies were performed in two electric steel-making
shops in metallurgical plants equipped with 100- and 200-ton arc furnaces.

The accompanying diagram shows the plan of motion of air currents within the shop. Arrows 1 show zones of air circulation; shaded areas 2 show zones of dust liberation; shaded areas 3 show places where dust and snow are deposited on the roof of the shop. A and B show the areas where



workers are involved in furnace operation and pouring operations respectively. The studies determined that in modern steel-making shops with high-capacity electric arc furnaces and oxygen injection, workers are subjected to the influence of a number of unfavorable production factors, primarily high temperature in the summer, low temperature in the winter with intensive infrared radiation, high dust content of the air and noise. Current ventilation plans provide neither sufficient air flow over working locations nor sufficient filtering of exhaust air to protect the atmosphere from pollution. Figure 1; Table 1; References 4 (Russian).

USSR

UDC 613.644:621.7.044.4

HYGIENIC EVALUATION OF PULSE NOISE IN CONNECTION WITH THE INTRODUCTION OF ELECTROHYDRAULIC EQUIPMENT TO MACHINE BUILDING

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 22 Mar 76 pp 4-7

LYAPIDEVSKAYA, G. V., Leningrad Rayon Sanitary-Epidemiological Station, Moscow

[Abstract] In connection with the introduction of a new technological process for treatment of sheet materials in the machine-building industry,

the author studied the pulse noise generated both by existing and by the newly introduced equipment. The studies were performed in three characteristic areas: 1) an area of falling stamps with lead-zinc dies; 2) an area of falling stamps with containers representing a hydroelastic medium; 3) an area of operation of new electrohydraulic presses. The studies performed confirmed the desirability of introducing the new technology for treatment of sheet material on electrohydraulic presses in order to improve the sanitary-hygienic conditions of labor of stamp workers. When working with the electrohydraulic press, the stamp operator will be fully isolated from other noises, operating the press from an insulated cabin containing the control panel. The use of individual ear protection in this situation is hindered by the fact that it makes communication more difficult and prevents workers from hearing the warning horns of vehicles moving in the plants. Figure 1; References 6 (Russian).

USSR

UDC 613.646:621.87(213.5)

LABOR HYGIENE OF TOWER CRANE OPERATORS UNDER HOT CLIMATE CONDITIONS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 9 Mar 76 pp 8-10

BABAYEV, A. and BOBOKHODZHAYEV, SH. A., Institute of Epidemiology and Hygiene, Dushanbe

[Abstract] A study was made of the conditions of labor and health of 26 power crane operators during the course of the working day during the warm and cold seasons of the year in construction of civil and industrial projects in Dushanbe and Regara. It was found that a number of unfavorable production factors were present: high and low air temperatures, noise and vibration and unsatisfactory illumination when working on the evening shift. During the warm season, there is some stress on processes of temperature regulation, manifested as an elevation of body temperature to 37°C and higher, skin temperature to 36-37°C and significant dehydration. During the cold season, some chilling of the body of crane operators was noted, particularly in the morning. The conditions of labor of crane operators in tower cranes can be improved by design changes to improve the thermal insulation of the operators' cabin and the installation of air conditioners to cool the cabins in the summer. References 3 (Russian).

USSR

UDC 613.6:621.951.1]:613.99

PHYSIOLOGICAL-HYGIENIC EVALUATION OF THE CONDITIONS OF LABOR OF FEMALE DRILL OPERATORS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 2 Mar 76 pp 10-13

PAVLENKO, A. I., Dnepropetrovsk Medical Institute; Aggregate Plant of the Fiftieth Anniversary of the USSR

[Abstract] This study was performed in order to determine the severity and stress of the labor process and develop measures for its optimization and improvement of the conditions of labor of drill operators. Twenty-five female workers 27 to 48 years of age with 9 to 21 years in service formed the subjects of the study. The conditions of labor, working hours, operations performed and time required to perform operations were all noted. Muscular force, pulse rate and other physical indicators were recorded. Physiologically unfavorable conditions included the forced position of the workers, heavy physical load, lack of regular rest breaks or conditions for effective utilization of breaks. A number of measures are suggested: partial mechanization of labor; processing of parts by program controlled machine tools; introduction of required breaks for rest (10 minutes after 3 hours of work and 10 minutes after an additional 3 1/2 hours); construction of a rest area including sufficient seating for all workers; and provision of local illumination at drill presses. Tables 2.

USSR

UDC 613.6:546.683

THE CONDITIONS OF HEALTH AND LABOR OF WORKERS WITH THALLIUM AND ITS COMPOUNDS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 12 Mar 76 pp 14-16

POLYAKOVA, M. M., SIDOROVA, N. V., SPIRIDONOVA, V. S., SHABALINA, L. P., and SHATALOV, N. N., First Moscow Medical Institute

[Abstract] A study of the conditions of labor at four enterprises producing thallium and its compounds established that shortcomings in the technological processes consist primarily in the presence of large numbers of manual operations and the lack of continuity in the technological plan. The primary harmful factor at all of the enterprises studied is thallium, which enters the air in working areas in the form of condensation and disintegration aerosols. The quantity of thallium in the air of working locations varied between 0.0039 and 0.066 mg/m³, MPC for thallium 0.01 mg/m³.

Case histories of workers are presented indicating that thallium and its compounds cause functional changes in the nervous system of aesthenic-neurotic, aesthenic-autonomic and aesthenic types, with autonomic-vascular dysfunction. The quantity of thallium in the urine does not correlate clearly with changes in the nervous system. References 2 (Western).

USSR

UDC 613.644:677.024]-07:612.886

EVALUATION OF VESTIBULAR GALVANOMETRY IN WEAVERS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 20 Nov 75 pp 24-27

SYROMYATNIKOV, YU. P., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR

[Abstract] The high noise level is the primary harmful factor to which weavers are exposed. A study of 20 textile unions established that in 50% of cases the noise is combined with vibration of working locations exceeding the permissible levels. The authors interviewed a group of 132 workers with 1 to 10 years in service, and discovered that long-term work as a weaver has a sufficiently harmful effect on the vestibular analyzer, resulting from general low-frequency vibration acting simultaneously with noise, to cause increasing symptoms of motion sickness. Low-frequency vibration is given primary significance in the development of this syndrome. Preventive measures must include measures intended to reduce both vibration and noise of working locations. Table 1; References 9 (Russian).

USSR

UDC 613.632-07:618.33-099+612.646.014.46:613.632

SOME PROBLEMS OF THE EXPERIMENTAL STUDY OF THE EMBRYOTROPIC EFFECT OF INDUSTRIAL CHEMICAL COMPOUNDS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 31 Mar 76 pp 27-30

SANOTSKIY, I. V., FOMENKO, V. N., SAL'NIKOVA, L. S., and SHEVELEVA, G. A., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

[Abstract] Based on the experience and evidence accumulated at the Laboratory of Toxicology of the Institute of Labor Hygiene and Occupational Diseases, the authors discuss the primary problems related to the study of

the embryotropic activity of industrial chemicals. These include the study of the sensitivity of pregnant and nonpregnant animals, differences in which are quite significant for establishing selectivity of the effect; study of variations in embryotropic effect during the trimesters of human pregnancy, particularly during the first trimester, when pregnant women are generally not transferred to different jobs to avoid exposure to chemicals; study of post natal development of progeny to the point of physiological maturity, since developmental defects sometimes occur only in the post natal period; and study of embryotropic effects at low concentrations, which may be realistically expected to be encountered in the working life of pregnant women. References 8 (Russian).

USSR

UDC 612.014.46:661.723.64].017.2+613.632:661.723,64

COMPARISON OF PROCESSES OF "ADAPTATION" OF THE ORGANISM TO CONTINUOUS AND INTERMITTENT EXPOSURE TO 1,1,2,2-TETRACHLOROETHANE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 27 Nov 75 pp 30-34

SHMIDT, P. (GDR, Berlin), ULANOVA, I. P., AVILOVA, G. G. (Moscow) and BINNEWIS, S. M., (GDR, Berlin), Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Central Institute of Labor Medicine

[Abstract] 1,1,2,2-tetrachloroethane, used in industry as a solvent and reagent for chlorination of polyvinylchloride, was used to compare the reactions of the body to continuous and intermittent exposure. The experiment was performed on white rats, exposed to relatively constant levels of concentration or to 5 peaks of concentration of 15 minutes each with alternating 40-minute interruptions during which time the rats breathed pure air. The weighted mean concentration with both poisoning modes was approximately the same, 1/10 of the one-time action threshold, 4-5 times the MPC. No true adaptation of the body to the poison was observed in either case. The intermittent mode was found to be the more unfavorable for the organism. Figures 2; Table 1; References 14: 6 Russian, 8 Western.

USSR

UDC 615.917:547.472.2].092:612.017.2

DEVELOPMENT OF ADAPTATION REACTIONS WITH VARIOUS MODES OF POISONING WITH
ETHYLENEGLYCOL BUTYL MONOESTER

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2,
Feb 77 signed to press 18 May 76 pp 38-41

LOMONOVA, G. V. and KLIMOVA, E. I., Gor'kiy Institute of Labor Hygiene and
Occupational Diseases

[Abstract] A study was made of the influence of two poisoning modes with varying times of exposure (3 and 6 hr) and periods of rest with identical total number of hours per week of exposure on the development of adaptation reactions during chronic poisoning with ethyleneglycol butyl monoester, a hydrophilic narcotic having specific effect on the blood, causing intravascular hemolysis in acute experiments. It was found that the "monotonic" mode with one day of rest per week had a more unfavorable influence on the organism than the mode with twice the daily exposure but 3 days in a row each rather than 6. In 3-hour exposures, the white rats used in the experiment exhibited a breakoff of general and specific adaptation reactions and changes in the blood. With 6-hour exposures, adaptation reactions were reinforced. Figures 2; Table 1; References 14: 12 Russian, 2 Western.

USSR

UDC 613.632:621.357.7]:658.311.44

PHYSIOLOGICAL CRITERIA FOR OCCUPATIONAL SELECTION OF ELECTROPLATERS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2,
Feb 77 signed to press 28 Jun 76 pp 42-44

MOLDAVSKAYA, S. I., Institute of Physiology imeni A. A. Bogomolets,
Academy of Sciences UkSSR

[Abstract] In order to develop criteria for occupational selection of electroplaters, the author decided to study nonspecific reactivity of the skin of technical school students, then trace the dependence of the development of skin disease as a function of these indicators. The observations can be completed within 1 year, since the technical school lasts for 10 months, after which the students within 2 or 3 months are exposed to all chemical substances which cause skin disease in electroplaters. The following skin reactivity indicators were found among the 63 test subjects to indicate unsuitability for the occupation of electroplater: a) an increase in electric conductivity of the skin of the flexor surface of the forearm under the influence of 1% caustic

soda for no less than 33%; b) a "painful" reaction to a mixture of chloroform and ethyl alcohol (9:1) for not over 60-65 s; c) no less than grade 4 reaction of the skin to this mixture. Tables 2; References 2 (Russian).

USSR

UDC 613.6:621.791.92

PROBLEMS OF LABOR HYGIENE DURING INDUCTION SURFACING OF PARTS OF AGRICULTURAL EQUIPMENT WITH HARD HIGH-CHROMIUM ALLOYS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 18 Oct 76 pp 44-45

MARCHENKO, A. V., and BROITMAN, V. I., Rubtsovsk City Sanitary-Epidemiological Station

[Abstract] A study was made of the conditions of labor in a shop containing continuous-flow automatic production lines performing induction surfacing of the parts of earthworking agricultural equipment with hard high-chromium alloys. The most important factor was the dust factor, varying from 8-20 mg/m³ of dust containing 43-50% chromium oxide, 2-3% silicon dioxide, 0.8-1.2% manganese, 30-34% iron carbide, 0.3-0.8% nickel, and small quantities of copper and boron. Workers were found to suffer from weak chronic chrome intoxication, cases of chronic rhinopharyngitis, and one case of occupational cataracts caused by infrared radiation was found. The authors recommended sealing of equipment, automation of control, shielding of working locations from infrared radiation and electromagnetic waves in the radio frequency band and increased ventilation effectiveness. Table 1.

USSR

UDC 616-001.34-057:622]-07:616.831-073.731

CONDITION OF CEREBRAL HEMODYNAMICS IN VIBRATION DISEASE OF MINERS BASED ON RHEOENCEPHALOGRAPHY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 28 Jul 75 pp 45-47

KAYSHIBAYEV, S. S., and DROBOT, V. I., Alma-Ata Institute of Regional Pathology

[Abstract] A study was made of the status of cerebral hemodynamics of 49 mining workers with initial (25) and moderate (24) vibration sickness. The rheographic indications of disorders of cerebral hemodynamics in vibration sickness characteristically show changes in the intensity of

pulse blood filling and cerebral vascular tonus. In the initial stage of vibration sickness there is functional spasm of the cerebral vessels which, with continuing progression of the clinical symptom complex, becomes more persistent and may later lead to cerebral vascular hypotension. The method of rheoencephalography can clarify the nature of the disorders of cerebral hemodynamics, deepening our understanding of the role of this factor in the development of functional disorders of the central nervous system, which is necessary for the development of vibration sickness therapy. Tables 2; References 9 (Russian).

USSR

UDC 616.24-003.667.7-091

CLINICAL-MORPHOLOGICAL CHARACTERISTICS OF PNEUMOCONIOSIS CAUSED BY THE DUST OF SLYUDYANSKIY MINE OF IRKUTSK OBLAST

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 12 Jun 75 pp 48

SEDOV, K. R., SLYUSAR', R. D., and STARKOV, M. V., Irkutsk Medical Institute

[Abstract] A study is made of pneumoconiosis at a mica-phlogopite mine in Irkutsk oblast. The disease was characterized by a triad of complaints: dyspnea, coughing and pain in the chest. Coughing, primarily dry, was the leading complaint. Respiratory function studies confirmed the presence of pulmonary pathology. Autopsy material from four miners with 4 to 25 years service who died of various causes not related to the effect of the dust showed that long-term inhalation of the dust leads to the development of an interstitial pulmonary process consisting of diffuse thickening and sclerosis of the alviolar and other septa, development of sclerosis around vessels and bronchi in addition to the diffuse fibrosis, individual small cellular fibrous foci as well as small and large focus emphysema were detected. The disease develops slowly and is relatively benign.

USSR

UDC 613.632.4+614.72]-074:543.272.62

EXPERIENCE OF DETERMINATION OF CARBON DIOXIDE GAS IN THE EXHAUST GASES FROM THE PRODUCTION OF POTASSIUM FERTILIZERS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 77 signed to press 24 Jun 76 pp 53-54

KRUGLOV, A. I., "ORGKHM" Trust Production Administration, Yaroslavl'

[Abstract] The author has successfully used a GUKh-1 chemical carbon dioxide gas analyzer to test dust and gas trapping installations associated

with a fluidized bed furnace used for the production of potassium fertilizer. The method of operation with the device and results of analysis of exhaust gas are presented, as well as the address of the manufacturing plant which produces the device, in Kazan'. The device can produce analysis results with an error of not over 5-10% relative to the volumetric method. The method of using the device is simple and reliable, determination times not exceeding 1 minute. Figure 1; Table 1; References 2 (Russian).

USSR

UDC 546.289:619-63/65

GERMANIUM AND ITS COMPOUNDS AS OCCUPATIONAL HAZARDS

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 57, No 6, Nov-Dec 76 signed to press 24 Nov 75 pp 583-586

ROSHCHIN, A. V., professor, and GUS'KOVA, YE. I., Central Institute for the Advanced Training of Physicians

[Abstract] Germanium and its compounds are being increasingly used in industry. There are some indications that germanium is a trace element in mammals. It and its compounds have toxic properties, as discovered in previous studies cited. In white mice the average lethal dose is 1,250 mg/kg, and the absolute lethal dose is 2,250. Poisoning takes place gradually. Chlorine and organic derivatives are the most dangerous, affecting respiratory organs. Chronic poisoning with germanium hydride leads to disturbances in the upper respiratory tract, the kidneys, spleen, and nervous system. Exposures of concentrations of 5 and 7 mg/cubic meters of germanium tetrachloride over a 7-month period caused an increase in the number of leukocytes in the blood, and reduced oxygen metabolism. The maximum concentration allowable is 1 mg/cubic meter of air. The toxicity and danger parameters of germanium hydride were established. The absolute lethal single dose was 2,100 mg/cubic meters. Repeated exposures of the lethal dose resulted in dyspnea and convulsions, and led to a comatose state in some animals. Symmetric aliphatic derivatives are more toxic than asymmetric ones, the presence of a double bond sharply increases toxicity. Repeated doses of germanium hydride in minimal concentrations caused minor changes in functions of the entire body and various organs. A human being can assimilate up to 1.4 grams per day in doses of 0.1-0.2 g without showing any symptoms. References 11: 7 Russian, 4 Western.

USSR

UDC 616.2 - 006.(470.41 - 201 Kazan')

RESPIRATORY ORGAN CANCER MORBIDITY IN KAZAN'

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 57, No 6, Nov/Dec 76
signed to press 17 Sep 76 pp 581-583

KALPINA, G. A., candidate of medical sciences, GIMADEYEV, M. M., docent,
and NAGIMOV, I. B.

[Abstract] In recent years there has been an increase of cancer of the respiratory organs, most vividly expressed in industrially developed nations and large cities. There have been few studies on this problem in Kazan'. Literature for other cities is mentioned. In the past 14 years mortality from cancer of the respiratory organs has increased. Data on this is shown for sex and age groups. For example, mortality rates for men aged 40-49 were twice as high in 1972 as in 1962, somewhat lower for the 50-59 age group, and more than four times higher for the group over 60 years old. Women suffer much less, due to different occupations and to smoking. Mortality is broken down by rayons within Kazan. The highest figures were found in the industrial and central areas. A standardized indicator of mortality was developed for each rayon. In 1972 it was 23.59 per 100,000 in rayon 1 (the industrial region), 25.51 in rayon 3 (central), and 19.38 in rayon 2. A table gives data for the entire city, its five rayons, broken down by sex and age group. As the data were standardized, rayon variations in mortality among men and women in various age groups are cancelled out. The variations are assumed to involve occupational factors, individual habits such as smoking, and in particular, air pollution by semicyclic aromatic hydrocarbons, including benzapyrene. Figures 1; Tables 2; References 4 (Russian).

USSR

UDC 615.849.66:546.74:616 - 056.3

SPECIFIC DESENSITIZATION FOR ALLERGY CAUSED BY NICKEL CHLORIDE

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 57, No 6, Nov/Dec 76
pp 571-572

SOMOV, B. A., professor, SOSONKIN, I. YE., and FLOMEN, YE. D., Moscow

[Abstract] It was attempted to reduce sensitivity to nickel compounds in guinea pigs by preliminary sensitizing them to this metal. Solutions of nickel chloride were given orally in small drops (25 drops per ml), containing 0.001 mcg of nickel. The drops were given daily in increasing doses up to 15-20 drops per day. During a 40 day period a guinea pig with a 330 g average weight received 0.244 mcg/kg of nickel. The animals

were classified according to reactions, which were evaluated every 24 and 48 hours. Of the 10 animals in the first group, sensitivity to nickel disappeared after the desensitization had reached 20 drops given twice daily; in the second group sensitivity disappeared in five and was reduced sharply in four, and one animal died. The second and fourth groups received distilled water and showed no reactions. This process also reduces sensitivity to cobalt, indicating the feasibility of using cobalt chloride in treating specific allergies to nickel compounds. The "ignition" reaction, which is vividly seen in humans, was weaker and rarer in the animals. The higher the sensitivity the more difficult it is to change the animal's reactivity. The data obtained show that it is possible to reduce sensitivity through specific oral desensitization.

USSR

UDC 614.8

SOCIAL HYGIENIC ASPECTS OF MORBIDITY AND ACCIDENTS AMONG PETROLEUM INDUSTRY WORKERS

Kazan KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 57, No 6, Nov/Dec 76
signed to press 15 Aug 76 pp 505-509

BOGDANOVICH, U. YA., professor, and YUNALEYEVA, S. A., senior scientific worker,
Kazan's Scientific Research Institute of Traumatology and Orthopedics

[Abstract] A survey of health and safety problems of petroleum workers in the Tatar ASSR. The industry spends a great deal on health and safety. Results of research into drill rig operator safety are examined. Accidents in this area of work are higher than for other groups in the sector. BU-75's are the main drill rigs used. Recommendations of specialists in labor physiology and psychology were not taken into consideration in their design; the work area is about 50 percent less than that required by industry safety rules. Lowering and raising operations take about 11-49 percent of work time, consequently most accidents occur during such work. Workers spend most of their time on their feet, leading to increased exertion of muscles in the neck, shoulders, spine, and back. The work is poorly illuminated and there is excessive noise, sometimes 5-20 decibels above the norms. Excessive vibration leads to disorders of the nervous system. Fatigue is not taken into consideration in analyzing accidents. It is easy for the management to state that the cause of an accident was "the victim did not observe technical safety rules." The remote location of drilling operations and bad weather also add to fatigue and illness. The most common illnesses are influenza and acute respiratory infections. They are followed by disorders of the nervous system, mainly lumbosacral radiculitis. This is due to heavy work, with overloading of the extremities and to vibration. Diseases of the bone and muscular system, myositis and arthritis, are the third most common type of diseases. They are followed

by skin diseases. The latter are more common among young workers up to 30 years old, and are two-four times more frequent among workers with less than 5 years compared to those with more than 20 years. This is due to acquisition of better work habits. Accidents among drill rig workers who have worked less than 5 years are 130 percent more frequent than for those with more than 20 years experience. Accidents are more common among younger workers: in 1974 workers with less than 5 years experience had 6.1 times more accidents and 9.1 times more days off due to disability than workers with more than 20 years. Since injuries to arms, legs, and joints are the most common accidents in this work, this should be taken into consideration in organizing medical aid. References 8: (Russian).

USSR

UDC 613.63/65 - 02:618.2/7+618.1

GYNECOLOGICAL MORBIDITY AMONG WOMEN ENGAGED IN PRODUCTION OF ETHYLENE OXIDE

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian Vol 57, No 6, Nov/Dec 76 signed to press 16 Dec 75 pp 558-560

YAKUBOVA, Z. N., honored physician of the Tatar SSR, and SHAMOVA, N. A., MIFTAKHOVA, F. A., and SHILOVA, L. F., candidates of medical science, Department of Obstetrics and Gynecology, Kazan Medical Institute imeni S. K. Kurushov

[Abstract] A study was made of 541 workers at a factory producing ethylene oxide in Kazan'. Of these, 282 were engaged in production and 259 worked in the plant administration. The control consisted of 100 workers having no contact with the chemical. Production workers has a higher morbidity (36.2 ± 4.8) than laboratory workers (14 ± 3.2). Previous studies have shown that dangerous factors are the rapid changes in temperature and pressure as well as high frequency sound (75-90 decibels, with a permissible level of 65 decibels). Air pollution is within allowable limits. Among production workers the most common disorders are affections of the cervix uteri, primarily among workers with more than 10 years service. The same holds for laboratory workers. Inflammatory diseases of the uterus are the second most common. Data on problems of pregnancy and birth are given. There were spontaneous abortions among 21.5% of the laboratory workers, 12.3% of the production workers and 9.24% of the administration workers. The danger of abortion increases with the length of employment. Toxicosis during the second half of pregnancy was observed in 14.7% of the production workers and 9.9% of labor workers, while the figure was 4.6% for administration workers. In general the births were at the proper time. Blood loss was less for production workers than for administration workers, possibly due to the better contraction ability, the increased amount of hemoglobin, as noted in a previous study. The five stillbirths resulted from problems during delivery. Infants developed normally. Systematic observations of workers and the transfer of pregnant production workers to other types of work can reduce morbidity. References 2 (Russian).

FUNCTIONAL CONDITION OF THE KIDNEYS IN WORKERS WHO CONTACT ALLYL CHLORIDE

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 10, 1976 pp 54-58

ALIZADE, G. A., GUSEYNOV, F. G., AGAMOVA, L. P., GUSEYNOVA, R. S., and ALESKEROV, F. A., Republican Clinical Urological Hospital, Baku, and Scientific Research Institute of Labor Hygiene and Occupational Diseases imeni M. M. Efendizade

[Abstract] Allyl chloride is a toxic chlorinated hydrocarbon produced in many industrial processes and has a pronounced irritating effect, a weakly narcotic action and causes morphological changes in the kidney glomerulus and canalicular system of experimental animals. Fifty human subjects (24-38 yr-old) of a glycerin-producing plant who had encountered allyl chloride at levels of 6.4-140 mg/m³ of air under working conditions for 5-8 years were examined. Tests included general blood and urine analysis and blood protein, sodium and potassium. Some (25) were examined by radioisotopic renography and dynamic scintigraphy, and others (15) by excretory urography. Results indicated that a long latent course of nephritis of chemical etiology can be conditioned by bodily compensation. Urography showed an 18% decrease in secretory and excretory functions and a 13% reduction in level and uniformity of contrast. The flow of a radioactive hippuric iodine preparation could be followed across vessels, through the canalicular system and upper urinary tract allowing evaluation of functional activity within 15-20 min. Associated biochemical studies of kidney filtrate showed a decrease in albumin and total protein and an increase in some globulins. Blood and urine sodium and potassium levels were high and blood chloride increased up to 80%. Some subjects had oliguria, nycturia or increased night or daily diuresis. The conditions found were attributed to allyl chloride. Application of isotopic studies allowed detection of early functional disorder of the kidneys before clinical symptoms or complaints. Figures 2; Tables 1; References 20: 19 Russian, 1 Western.

USSR

SOME QUESTIONS ON THE PHYSIOLOGY OF OIL REFINERY OPERATOR LABOR

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 10, 1976 p 53

AMIROV, R. O., and DOKTORSKIY, L. N.

[Text] A physiological-hygienic study of operator labor in oil refineries revealed that they work under conditions causing nervous-emotional stress, the work is physically burdensome, and the workers are under an undesirable influence of industrial environmental factors. Examined operators had functional impairment of the nervous, cardiovascular and muscular systems. The authors suggest basic guidelines for developing measures for normalizing work conditions of oil refinery operators. Figure 1; References 21 (Russian).

USSR

UDC 628.312.576.858.23+576.858.9:576.851.48):543.39

STUDY OF CONDITIONS FOR CONCENTRATION OF POLIOMYELITIS VIRUS AND BACTERIOPHAGES E ON IONEXCHANGE RESINS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
22 Mar 76 pp 56-59

LEPAKHINA, N. K., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] The resins used by the author were of Soviet origin (either industrially sold or still experimental) who tested their application in separating enteroviruses and bacteriophages from water of open reservoirs and from drinking water. Anionites AB-17-IK, AB-17-8, AN-22D, and AN-31G were found quite suitable to separate viruses from water; most effective were AB-17-IK and AN-31G. Maximum multiplicity factor is achieved in study of large volumes (no less than 3 l) of pure water which is free of organic suspensions and which contains microorganisms in small quantities (≤ 1 BOE/ml). Bacteriophages are concentrated to a less degree than poliomyelitis virus. Optimal conditions for concentration of viruses on ion-exchange resins are: preliminary acidification of the tested water to pH 5.5-6.5, and addition to it of CaCl_2 to a final concentration of 10 g/l; elution of the virus with Earle's solution, pH 8.2, Hottinger's bouillon with 10% bovine serum pH 8.4 or 0.5 M phosphate buffer pH 8.2; and virological examination of water samples immediately after condensation. References 7: 6 Russian, 1 Western.

USSR

UDC 576.851.21.094

THE INTRACYTOPLASMIC MEMBRANE SYSTEM IN BACTERIAL L-FORMS

Moscow IZVESTIYA AKADEMII NAUK. SSSR, SERIYA BIOLOGICHESKAYA in Russian No 1, 1977 signed to press 24 Mar 75 pp 140-144

KATS, L. N., KONSTANTINOVA, N. D., SHUL'GA, M. A., and KAGAN, G. YA., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

[Text] [Russian abstract provided by the source] A study was made of the ultrastructure of stable L-forms obtained under the effect of penicillin on *Streptococcus pyogenes* of the A group, *Mycobacterium tuberculosis*, *Listeria monocytogenes*, *Salmonella typhi*, *Proteus vulgaris*, *Vibrio NAG* and *Brucella abortus*. Detected in all L-forms was a well-developed system of intracytoplasmic membranes in the form of lamellar mesosomes (myelin-like structures), networks of membranes penetrating the cytoplasm or double-contoured free vesicles. Formations resembling mesosomes were detected

in the "elementary bodies." This can be evidence of the viability of the elementary bodies as the minimal size of the reproductive structures of L-cultures. Ejections of tubular and vesicular elements from the cells have been observed only in the first passage. On the contrary, in the stable L-forms mesosomes are formed again by invagination of the cytoplasmic membranes. It is assumed that in L-transformations first there is an ejection of mesosomes of the parent bacterial forms from which the L-forms were obtained, and then their own internal membrane system forms. The latter is morphologically more varied than in bacteria which have a cell wall. References 22: 9 Russian, 13 Western.

USSR

UDC 576.858

INFLUENCE OF AN ALIEN VIRUS ON SPECIFIC VIRAL INFECTION OF AN INSECT-HOST

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 pp 125-131 manuscript received 26 Apr 76

TARASEVICH, L. M., KOZHUKHAROVA, M. I., and OBKHODOVA, T. A., Institute of Microbiology, Academy of Sciences USSR, Moscow

[Text] [Russian abstract provided by the source] The suppressant effect of an alien virus -- granules of the winter moth *Agrotis segetum* Schiff -- on specific viral infection of the nuclear polyhedrose in *Porthetria dispar* L. was shown. That suppressant effect is not specific. The virions, and not the protein of the granules, are responsible for the suppression. When gypsy moth larvae were infected by the specific virus of nuclear polyhedrose, on the fifth day after infection an additional protein disk appeared during protein electrophoresis in acrylamidic gel. The virus-introduced protein is not one of the polyhedral proteins. The alien virus of *Agrotis* does not induce the formation of additional protein in the larvae and suppresses the synthesis of one of the proteins of the insect-host. Figures 5; References 13: 7 Russian, 6 Western.

USSR

UDC 576.858.9

ELECTRONMICROSCOPIC STUDY OF THE ANTIGEN-ANTIBODY COMPLEX FOR FINE DIFFERENTIATION BETWEEN THE PROTEINS INCORPORATED INTO THE STRUCTURE OF COLIDYSENTERY BACTERIOPHAGES

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 11, No 1, Jan/Feb 77 signed to press 19 Nov 75 pp 50-54

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[Abstract] The authors combined serological methods and electron microscopy to establish the presence and site of specific protein components on phages in a related group. Phages studied were T2, T4, T6, DDVIh⁺, and a mutant of phage DDVIh⁺. Neutralization reactions of the phages by starting anti-phage sera revealed the presence of nine antigenic components. Electron-microscopic study demonstrated localization of the specific antigens components on individual phages, where they are bound with filaments of the tail. This testified to antigenic non-identity mainly of this structure in phages of the group. Figures 6; Tables 2; References 13: 6 Russian, 7 Western.

USSR

UDC 576.809.429

INTEGRATION OF GENOMES OF TWO INFECTIOUS VIRUSES INTO MOUSE CELLS

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 11, No 1, Jan/Feb 77 signed to press 27 Oct 74 pp 69-73

ZHDAN, V. M., AZADOVA, N. B., KOPELMAN, R. N., YAKHNO, M. A., ZAKSTEL'SKAYA, L. YA., GUSHKIN, B. V., GOFMAN, YU. P., and GUSHKINA, YE. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] The authors have earlier established a model of mouse L cells, chronically infected with Sindbis virus (L-SV); the virus SV persists in this system in the form of ribonucleoproteid structure. It appeared in later studies that the DNA transcript of the RNA of virus SV is integrated into the DNA of the chronically-infected cells. In the present work three lines of mouse cells were studied: a line chronically-infected with virus SV and simian paramyxovirus SV5(L-SV-SV5); a line chronically-infected with paramyxovirus (L-SV5); and a line free of these viruses (L-0). Electromicroscopy and serological methods indicated that in the first two lines the genomes of the viruses were integrated into the cell DNA. The

cells of L-SV-SV5 and L-SV5 revealed intensive accumulation of ribonucleoproteids and virions with the characteristic morphology of paramixoviruses; the cells of L-0, oncornavirus type C, and mycoplasma. The paramixovirus produced by the first two cell lines was devoid of infectivity. Figures 5; Table 1; References 11: 4 Russian, 7 Western.

USSR

UDC 547.963.3

MATHEMATICAL STUDY OF THE KINETICS OF REASSOCIATION OF RANDOMLY SPLIT DNA

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 11, No 1, Jan/Feb 74 signed to press 8 Jan 76 pp 101-106

GAVRILOV, V. YU., (deceased), and MAZO, M. A., All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow

[Abstract] The authors cite Britten, et al. (1970) and Laird, et al. (1969) discussions about the wide use of data on kinetics of reassociation of nucleic acids for the resolution of various problems in molecular genetics. They have attempted, in the present work, a strict analysis of the initial stage of renaturation of DNA which has been sheared, randomly without repetition. Theoretical analysis indicates that at this stage the kinetic curves produced with change in UV-absorption, and with the help of endonuclease S1 should differ markedly from second order kinetic curves. Experimentally, such variance is significantly less than expected, which can be explained as due to the influence of the later stages of reassociation, even at $C_{ot}1/2$. Attention is directed to the influence of particle dimensions and distribution of repeated sequences on the initial rate of their reassociation. Figure 1; References 14: 1 Russian, 13 Western.

USSR

UDC 576.809.5:632.937.15

ON THE POSSIBLE ROLE OF EXTRACHROMOSOMAL DNA IN THE BIOSYNTHESIS OF ENTOMOCIDE ENDOTOXIN OF BAC. THURINGIENSIS

Yerevan DOKLADY AN ARMYANSKOY SSR in Russian Vol 63, No 1, 1976 signed to press 21 Jun 76 pp 42-47

ZAKHARYAN, R. A., AGABALYAN, A. S., CHIL-AKOPYAN, L. A., GASPARYAN, N. S., BAKUNTS, K. A., TATEVOSYAN, P. YE., and AFRIKYAN, E. K., corresponding member, Academy of Sciences Armenian SSR, Institute of Experimental Biology and Institute of Microbiology, Academy of Sciences, Armenian SSR

[Abstract] Cultures of sporeforming *B. thuringiensis* produce crystal-like proteinaceous inclusion with high insecticidal activity (delta endotoxin).

Cultures were incubated at 28°C for 5 days, stored for 1 year at 8-10°C then studied for reproducibility and preservation of toxin-forming ability on MPA medium. Some strains of serotype galleriae have better retention of toxin-forming ability, whereas some strains of serotype caucasicus had relatively large loss of the ability. Some strains of most serotypes studied completely lost the ability to form toxin. Intensity of toxin formation varied with medium and conditions of growth. Occasional cells produced 2-3 times more toxin than others. Lack of toxin-forming ability by *B. thuringiensis* in nature can result in loss of H antigen and consequent confusion with *B. cereus*. Spontaneous and stable loss of the ability to form toxin, the enhancement of this effect by increased temperature, and the correlation with phage resistance or susceptibility, suggested extrachromosomal inheritance. Extrachromosomal DNA was extracted, deproteinized and separated electrophoretically on an Agarose column. Results correlated two extrachromosomal plasmid genes with toxin-forming ability and one gene with lack of the ability. Separation of DNA and RNA by Sepharose 4B chromatography suggested the same and indicated that a cytoplasmic RNA coded for the toxin. Figures 2; Tables 1; References 6: 3 Russian, 3 Western.

USSR

UDC 591.112:598.132

CHARACTERISTICS OF AFFERENT ACTIVITY OF CARDIAC NERVES IN THE TORTOISE

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 1, Jan/Feb 77 signed to press 20 Dec 75 pp 24-30

KAMENSKAYA, V. N., SAMONINA, G. YE., and UDEL'NOV, M. G., Department of Human and Animal Physiology, Moscow University

[Text-English language abstract supplied by authors] On the basis of changes in afferent impulsation emerging from the heart of the tortoise *A. horsfieldi* under various conditions of cardiac hemodynamics, it was shown that discharge activity of the superior cardiac nerves belongs to mechanoreceptors which are located in the ventricle and the adjacent arterial vessels. The discharge in these mechanoreceptors coincides with ventricular systole. The second, predominant, type of afferentation is presented by irregular continued activity in both the superior and inferior vagal branches. The origin of this activity remains uncertain. Figures 4; Tables 2; References 11: 5 Russian, 6 Western.

USSR

UDC 591.17:595.61

INDUCED LOCOMOTION IN THE MILLIPEDE JULUS SP.

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 1, Jan/Feb signed to press 4 Aug 75 pp 31-38

KARPOVICH, A. L., and SMOLYANINOV, V. V., Institute of Problems of Transmission of Information, Academy of Sciences USSR, Moscow

[Text-English language abstract supplied by authors] Coordinated locomotor activity in the decapitated millipede *Julus* sp. was induced either by mechanical stimulation of the legs with the aid of a treadmill band, or by electrical stimulation of separate parts of the abdominal nervous cord. For the walking induced by mechanical stimulation of the legs, it was shown that: 1) after the "support phase," an additional phase of locomotor cycle, i.e. a "pause phase," is registered; 2) the relationships between kinematic parameters are similar to those recorded during normal walking of the intact millipede and correspond to walking at the lowest velocity. In the case of locomotion induced by electrical stimulation, a "start locomotion threshold" was observed: if stimulation level exceeds this threshold, forward walking is induced, being the faster the stronger this stimulation. Besides, a second threshold phenomenon was found--a "threshold of the reversion of locomotion direction." When this threshold is exceeded, forward walking is replaced by backward one. The relationships between

kinematic parameters of locomotion induced by electrical stimulation are also similar to corresponding relationships of normal spontaneous walking in the intact millipede, although in this case a "pause phase" is absent. Figures 4; References 12: 6 Russian, 6 Western.

USSR

UDC 612.821.7:612.019:547.95

COMPARATIVE NEUROCHEMICAL AND PHYSIOLOGICAL CHARACTERISTICS OF CATALEPSY-LIKE REST AND SLEEP

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 1, Jan/Feb 77 signed to press 25 Jun 75 pp 56-61

DEMIN, N. N., KARMANOVA, I. G., RUBINSKAYA, N. L., and KHOMUTETSKAYA, O. YE., Laboratory of Functional Neurochemistry, Institute of Physiology imeni I. D. Pavlov, Academy of Sciences USSR; Laboratory of Comparative Physiology of Sleep, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

[Text-English language abstract supplied by authors] In vertebrates (excluding mammals), rest appears also in the form of a special functional condition of the catalepsy type. In hens, its total duration is higher in the day-time than in the twilight; it is completely absent at night. This natural condition in hens may be imitated by photogenic catalepsy which is developed in response to rhythmic illumination of animals. Cytospectrophotometric investigation of single cells of the supraoptic nucleus indicates that with respect to absence of changes in absolute content (per 1 cell) of protein in the neurons, cataleptiform rest in hens does not differ from sleep in rats. However, in contrast to sleep, this immobilization is associated with decrease of RNA content of the neurons, as well as with absence of accumulation of proteins and RNA in gliocytes. During cataleptiform rest, insignificant changes were found in the content of proteins and RNA in cells of ectomammalian nucleus of the additional optic system and thalamic round nucleus. Cataleptiform (photogenic) immobilization in hens is presumably a metabolically passive form of rest as compared to the sleep in rats, which is characterized by anabolic processes in the brain. Figures 4; References 17: 16 Russian, 1 Western (citing Soviet authors).

CHANGES IN LEVEL OF DNA METHYLATION IN RAT BRAIN DURING DEVELOPMENT OF A
CONDITIONED REFLEX

Moscow MOLEKULYARNAYA BIOLOGIYA in Russian Vol 11, No 1, Jan/Feb 77 signed
to press 12 Mar 76 pp 181-188

VANYUSHIN, B. F., TUSHMALOVA, N. A., GUS'KOVA, L. V., DEMIDKINA, N. P., and
NIKANDROVA, L. R., Laboratory of Bioorganic Chemistry and Department of
Higher Nervous Activity, Moscow State University imeni M. V. Lomonosov

[Text-English language abstract supplied by the authors] The amount of 5-methylcytosine, GC content and content of different pyrimidine isoplioths in DNA of cerebral cortex, hyppocampus and cerebellum from rat brain have been studied at different stages of a simple alimentary conditioned reflex formation. At the early stages of learning (20 and 50 min) 5-methylcytosine content increases by 22 and 26% in cortex DNA, by 18 and 7% in hyppocampus DNA and by 17 and 15% in cerebellum DNA. Twenty-four hours later this increase of the 5-methylcytosine amount in cortex and hyppocampus DNAs corresponds to about 10% and is not seen in cerebellum DNA. In active control animals at 20 min and 50 min there is some increase in the 5-methylcytosine content in DNA of cortex and cerebellum but not in hyppocampus DNA. This increase disappears completely 24 hours later. During the conditioning procedure, GC content and amount of pyrimidine isoplioths in DNA studied do not change. Thus, the differences in the 5-methylcytosine content observed are due to the changes in the proper DNA methylation level. Figure 1; Table 1; References 24: 9 Russian, 15 Western.

ROMANIA

UDC 615.32 Sophora prodani

IDENTIFICATION, MEASUREMENT AND EXTRACTION OF ANTHRACENE DERIVATIVES FROM THE UNDERGROUND PART OF SOPHORA PRODANI ANDERS SPECIES

Bucharest FARMACIA in Romanian No 4, 1976 signed to press 7 Feb 75
pp 219-226

PASLARASU, Nadejda and FEODOROV-RINCIOG, Ecaterina, Laboratory of Pharmacognosy, Faculty of Pharmacy, Bucharest

[Abstract] The therapeutic importance given in recent years to some cytostatically active constituents extracted from various species of Sophora induced the authors to more thoroughly study the chemical composition of the Sophora prodani Anders species. Chemical and physico-chemical methods were used to identify anthracene derivatives under oxidized and reduced form in the underground organs of the Sophora prodani Anders species. The histochemical analysis resulted in the location of the anthracene derivatives in the pericyclic area of the underground organs studied. Paper and thin layer chromatographic study resulted in the separation and identification of three anthracene derivatives, including two under the form of free aglycons ($R_f=0.84$; 0.72 or 0.87 ; 0.75) and one under heterozide form ($R_f=0.56$; 0.48). For the free aglycon with $R_f=0.84$; 0.87 was the oxidized and the other one possibly its reduced form. By using the Auterhoff procedure the authors determined on the Pulfrich photocolormeter an amount of 1.1139 g% anthracene derivatives and 1.1200 g% by using Spekol C. Zeiss, Jena (DDR). The authors extracted and physico-chemically determined the aloë-emodol, m.p. $223-226^{\circ}\text{C}$ (Mikroheitztisch). Figures 5; Tables 4; References 12.

ROMANIA

UDC 547.288.3

SYNTHESIS OF SOME HYDRAZIDONES OF THE 1,2,4-TRIAZOL-3-IL-MERCAPTOACETIC ACID SERIES

Bucharest FARMACIA in Romanian No 4, 1976 signed to press 15 Jun 76 pp 193-196

ZOTTA, V. and TATARU, Ana, Laboratory of Pharmaceutical Chemistry, Faculty of Pharmacy, Medical-Pharmaceutical Institute, Bucharest

[Abstract] For the purpose of pharmacodynamic testing focusing on the influence of various substituents added to the heterocyclic nucleus of some hydrazidones of the symmetric 3-mercaptotriazol series, 12 new N-(4-phenyl-5-methyl-1,2,4-triazol-3-il-mercaptoacetic)-N'-benzilidene-hydrazide compounds were synthesized. The working conditions and outputs were determined and quantitative analyses of C, H and N were made. The

hydrazidones prepared were white, crystallized substances, with the exception of the nitro derivatives which were slightly yellowish. All had sharp melting points. Purification proceeded fairly easily. The solvents used included ethanol, methanol, toluene or amyl alcohol. It was found that the hydrazidones recrystallized from amyl alcohol had sharper melting points and a more advanced degree of purity. The structure of the new compounds, deduced by synthesis, was confirmed by IR spectral analysis in the range between 400-3600 cm^{-1} by means of a UR-10 automatic spectrophotometer, based on the potassium bromide pastilling technique. Table 1; References 8.

ROMANIA

UDC 615.779.93-014.4

INFLUENCE OF PRESERVATIVES ON THE STABILITY AND RELEASE OF ANTIBIOTICS
FROM HYDROGELS

Bucharest FARMACIA in Romanian No 4, 1976 signed to press 22 May 74
pp 203-210

POPOVICI, Adriana, ROGOSCA, Maria, PETER, M., and VOLOC, N., Section of
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[Abstract] A review is given on studies conducted on the stability and release of four antibiotics in a 1% concentration from six hydrogels prepared without preservatives and six parallel samples with 0.001% phenylmercuric borate or with 0.05% sorbic acid. Results showed that hydrogels are adequate vehicles for the optimal release of tetracyclin, erythromycin, chloramphenicol, and neomycin. The best release involved hydrogel from sodium alginate, polyvinyl alcohol, and aerosyl. Average release involved hydrogels with cellulose derivatives. Bentonite reduced the release. The organomercurial compounds (phenylmercuric borate) added for preserving purposes in hydrogels with cellulose derivatives indicate reduced release, in comparison to preparations without preservatives. Tetracyclin and chloramphenicol retained their antibiotic activity after 8 months in hydrogels with cellulose derivatives and polyvinyl alcohol. Bentonite hydrogel is not recommended. Erythromycin was degraded in the hydrogels surveyed. In the hydrogel with bentonite only 24-52% of the activity was preserved. Neomycin sulfate was well preserved in polyvinyl alcohol hydrogel and was almost completely degraded in bentonite gel. The hydrogels with antibiotics required the addition of preservatives (0.001% phenylmercuric borate or 0.05% sorbic acid) in order to prevent fungus contamination. Figures 2; Tables 2; References 19.

USSR

UDC 612.019:597.44:612.822.3:612.86:615.784/787

ELECTRICAL RESPONSES IN THE BRAIN OF THE STURGEON ACIPENSER GUELLENSTAEDTI
TO STIMULATION OF THE OLFACTORY NERVE AND THEIR PHARMACOLOGICAL MODIFICATION

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13,
No 1, Jan/Feb 77 signed to press 10 Feb 75 pp 94-96

KRATSKIN, I. L., VESELKIN, N. P., PALATNIKOV, G. M., and KASITOV, R. YU.,
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Academy of Sciences USSR, Leningrad; Institute of Physiology imeni A. I.
Karayeva, Academy of Sciences Azerb SSR, Baku

[Abstract] The olfactory system is one of the leading factors in development of the endbrain in early stages of vertebrate evolution. The authors have continued their studies on this system, earlier examined in the respiratory projections in the brain of chondral ganoids. In this work they examined 22 sturgeon 26-60 g; they recorded evoked potentials in the sturgeon brain to olfactory nerve electrical stimulation. Responses of the ipsilateral olfactory bulb were similar to those in other vertebrates. The area of maximum response was found in the ipsilateral hemisphere. Arecoline, which readily penetrates the hemato-encephalytic barrier and excites the muscarinic cholinoreceptors, evoked a short-term lowering of the evoked potentials in the olfactory bulb; it also caused a 3-fold drop in the evoked potentials in the ipsilateral hemisphere. Atropine action was found to be antagonistic to that of arecoline. It was shown that the blocking effect of the arecoline, administered intramuscularly, is not related to its effect on the olfactory bulb. The pharmacology of the synaptic transfer in the OL of fish is discussed. Figure 1; References 14: 5 Russian, 9 Western.

USSR

UDC 617-089.5-039.74-036.8

COMPREHENSIVE METHOD OF EVALUATING THE EFFICACY OF PREMEDICATION

Moscow SOVETSKAYA MEDITSINA in Russian No 12, 1976 signed to press
2 Oct 74 pp 101-107

OSIPOVA, N. A., BOL'SHAKOVA, T. D., SELEZNEVA, A. I., and VINNITSKAYA,
E. B., First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] Emotional stress and neurological status were studied in 48 patients receiving premedication prior to surgery by a combination of techniques: EEG, galvanic skin reflex, pneumogram, etc. and determination of blood pressure, pulse rate, levels of excretion of epinephrine and norepinephrine with urine, level of free acetylcholine, etc. Four types

of premedication were assessed: (i) meperidine hydrochloride and atropine, (ii) promethazine hydrochloride, meperidine hydrochloride, and atropine, (iii) diazepam, meperidine hydrochloride, and atropine, and (iv) neuroleptanalgesics and atropine. The first two types of premedication had little effect in allaying anxiety even in mentally balanced individuals. Diazepam combined with meperidine hydrochloride proved to be the best in emotionally unstable and neurotic patients because it blocked the clinical and EEG symptoms of emotional excitement and strong sympatheticoadrenal reactions while mitigating autonomic manifestations. Premedication with neuroleptanalgesics was effective in patients with cardiovascular pathology (hypertension, ischemic heart disease, etc.). It kept the blood pressure and heart rate within acceptable limits and generally had a sedative effect, although in a few cases it paradoxically provoked anxiety, fear, and restlessness. Figures 3; References 16: 13 Russian, 3 Western.

USSR

UDC 547.953+591.18.05:595.384:597.82

COMPARATIVE BIOCHEMICAL STUDIES OF PHOSPHOINOSITIDES AS FUNCTIONALLY
ACTIVE COMPONENTS OF EXCITABLE MEMBRANES IN NERVOUS FIBERS

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13,
No 1, Jan/Feb 77 signed to press 6 Jan 76 pp 11-17

TRET'YAK, A. G., and LIMARENKO, I. M., Laboratory of Physical Chemistry of
Membranes, Biology Faculty, Moscow University

[Text-English language abstract supplied by authors] The effect of
acetylcholine (ACh) and cyclic 3',5'-adenosine monophosphate (cAMP) on
phosphoinositide (PI) metabolism and associated changes of the permeability
of the nervous fibers in the crustaceans *Carcinus maenas* and *Eriphia
spinifrons*, as well as in the frog *Rana temporaria*, has been investigated.
It was shown that ACh induces a significant decrease in the content of
triphosphoinositides (TPI) in the nervous fibers of the crabs and in-
creases their potassium permeability, which in its turn results in
depolarization of the fibers. ACh did not affect frog nervous fibers.
cAMP significantly increases the incorporation of ³²P into TPI function
of crab nervous fibers during conduction of excitation and also facilitates
repolarization of the fibers after application of ACh. Proserine effective-
ly protects nervous fibers from the influence of ACh, indicating possible
participation of acetylcholinesterase in TPI hydrolysis. The data obtained
suggest that PI are involved in the regulation of membrane permeability of
crab nervous fibers to potassium ions. Figure 1; Tables 3; References 32:
11 Russian, 21 Western.

USSR

UDC 598.816:591.181

IMPULSE NEURONAL REACTIONS OF THE HYPERSTRIATAL PART OF THE FOREBRAIN TO
VISUAL STIMULATION IN THE CROW CORVUS CORONE

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13,
No 1, Jan/Feb 77 signed to press 15 Apr 76 pp 69-74

MORENKOV, E. D., and DO KONG KHUN', Laboratory of Comparative Physiology of
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[Text-English language abstract supplied by authors] Studies of impulse
activity in 452 neurons of the hyperstriatal part of the forebrain in crows
revealed visual projectional zone within the protuberance. With deepening
penetration of the microelectrode, the receptive fields shifted upward and
increased in diameter from 3-4 to 30-50 and even 90°; the relative amount
of directionally sensitive neurons with preferred movement of the stimuli

backward and upward increased. In rostral regions, neurons with receptive fields in temporal areas of the visual field are located, whereas nasal areas are projected to caudal parts of the protuberances. Selectivity of neuronal reactions to changes in illumination, the size and the rate of movement of the stimuli, as well as neuronal sensitivity to repeated stimulation, were demonstrated. Figures 3; References 10: 3 Russian, 7 Western.

USSR

UDC 591.132:591.483:597.35:597.82:598:132

EFFECT OF ERGOTOXIN ON MOVEMENT OF THE STOMACH IN THE SKATE, FROG, AND TORTOISE

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 1, Jan/Feb 77 signed to press 11 Aug 75 pp 89-91

GZGZYAN, D. M., and KUZINA, M. M., Group for Study of the Development of Neurohumoral Regulation of the Alimentary Tract, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

[Abstract] Experimental procedures used have been described earlier by Gzgzyan (Fiziol. zh. SSSR, Vol 57, 1971, p 594; Zh. evol. biokkim. i fiziol. Vol 10, 1974, p 98). Ergotoxin used was DC-ergotoxin Spofa (CSSR). The participation of the sympathetic nervous system (SNS) in regulation of secretory and motor activity of the mammalian stomach has been firmly established. It is manifested mainly in the form of inhibition of functional activity. The effect of sympathetic innervation on the activity of these stomach functions in other vertebrates has been studied little. There is practically no information on participation of the SNS in regulation of stomach motorics in fish, amphibians and reptiles, and such data would help an understanding of formation of mechanisms of regulation of basic functions of the alimentary system of familiar animals and man. The authors have examined participation of the SNS in regulation of motor activity of the stomach in the skate (*Dasyatis pastinaca*), frog (*Rana ridibunda*), and tortoise (*Agrionemys horsfieldi*). They found that ergotoxin, 200 mcg/kg body weight has no effect on skate stomach motor activity; 500 mcg/kg produces, 20-30 min after injection, an excitation of contraction followed by inhibition. In frogs, 25 mcg/kg produces excitation of contractions; 100 mcg/kg initially stimulates motor activity and subsequently inhibits it. In the tortoise, 25 mcg/kg increases stomach contraction; 2000 mcg/kg inhibits it. Data are tabulated, and indicate that the SNS of fish, amphibia, and reptiles, as with vertebrates, does participate in regulation of the stomach motor function. Table 1; References 13: 12 Russian, 1 Western.

THE RELATIONSHIP BETWEEN PROLIFERATIVE WAVES IN HEPATOCYTES AFTER
HEPATECTOMY AND WAVES OF DIURNAL RHYTHM OF MITOTIC ACTIVITY. 1. THE
PATTERN OF THE MITOTIC WAVE AND THE TIME TO REACH ITS MAXIMA AS A
FUNCTION OF THE TIME OF OPERATION

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Central Scientific Research Roentgeno-radiological Institute, Ministry of
Health USSR, Leningrad

[Text-English language abstract supplied by author] The diurnal rhythm of mitotic activity (MA) of intact animal hepatocytes and the proliferative wave of hepatocytes after partial hepatectomy at time t_0 are thought to appear as a result of formation of an initial proliferative wave, P_k -wave, within the G_0 -phase at constant moments of the time of day $t_{k+1} = t_k + T_{MA}$ ($T_{MA} = 24$ hrs/K, $k=1$, or 2, ..., or K) under the influence of the regulating system of the organism. Cells of the P_k -wave pass during a short time Δt ($\Delta t < T_{MA}$) from the G_0 -phase into the transformation phase, and then into the G_1 -phase. The 1st stimulated proliferative wave is formed at time t_k , if $t_k - T_{MA} < t_0 \leq t_k$; its intensity depends most likely on the intensity of the corresponding P_k -wave of the intact liver. It was noted that time t_0 of partial hepatectomy was necessary to coordinate with t_k , but not with the time of the maximal mitotic activity, and that it was necessary to hepatectomize all animals within the interval from time $t_k - T_{MA}$ to time t_k . The model was shown to compare well with data by Post, et al., (1963), Barbason (1970), and Van Cantfort and Barbason (1972) for hepatocytes of Wistar rats with $T_{MA} = 8$ hrs, and t_k ($k=1, 2, 3$) within intervals (2 A.M.; 4 A.M.), (10 P.M.; Noon), and (6 P.M.; 8 P.M.). The maximal rate of liver regeneration was observed for all the hepatectomized animals with the time of operation being between 8 P.M. and 2 A.M. Figures 2; References 11: 7 Russian, 4 Western.

I. M. SECHENOV'S IDEAS ON "DARK" SENSATIONS AND THEIR FURTHER DEVELOPMENT

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian
No 1, 1977 signed to press 4 May 76 pp 18-31

CHERNIGOVSKIY, V. N., Institute of Physiology imeni I. P. Pavlov, USSR
Academy of Sciences, Leningrad

[Text] [Russian abstract provided by the source] I. M. Sechenov developed and expressed ideas about the existence in man of special sensations which he called "dark." He considered the source of those sensations to be processes continuously occurring in the internal organs. He assumed that those "dark" sensations are the basis of the normal feeling of general well-being and comfort. Presented in the article are the results of

numerous experiments which the author considers confirmation of the existence of similar sensations in animals. A basis for such sensations is provided by recorded changes in numerous physiological parameters during stimulation of the interoceptors. The changes might be considered an objective source of some subjective "dark" sensations developing perhaps in animals. The data presented in the article are an attempt to develop further I. M. Sechenov's ideas on "dark" sensations. References 27: 21 Russian, 6 Western.

USSR

PATHOPHYSIOLOGICAL MECHANISMS OF THE INFLUENCE EXERTED BY HYPEROXIA ON HUMAN LUNG FUNCTION

Moscow IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA in Russian No 1, 1977 signed to press 9 Aug 74 pp 38-42

TIKHONOV, M. A., and LOGINOVA, YE. V.

[Abstract] The reported work had the goal of explaining some mechanisms of pulmonary hyperoxic pathology by investigating peculiarities of the disorder of their function caused in 62 healthy men aged 18-23 years by respiration of pure oxygen with partial pressures of 740 and 168 mm Hg, and also study of the possibility of cumulative effects of hyperoxia. Changes of the diffusive capacity of the alveolocapillary membrane proved the hypothesis of direct toxic effect of oxygen on pulmonary structures. No cumulative reaction of the lungs to the repeated influence of normobaric hyperoxia was observed. Possible pathophysiological mechanisms of the development of obturative atelectasis are discussed. Figure 1; Table 1; References 13: 3 Russian, 10 Western.

USSR

UDC 614.31-078

SOME BACTERIOLOGICAL METHODS FOR ASSESSMENT OF THE SANITARY CONDITION OF EATING PLACES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
15 Mar 76 pp 101-102

SUSLOV, S. YE., and VARVASHTYAN, A. G.

[Abstract] The USSR has no standard regulations for carrying out, or bacteriological control of the efficacy of, utensil cleaning. Agents which have been recommended for this purpose in the USSR include Kessler's, Siroco, Kheyfets', Kurochkin's, Smirnova's, Voynarovskiy's, khinozol-brom-cresolic purple-KhB, 10-20% bile bouillon, and others. The Siroco medium (glucose-0.5 g, 5% solution of rosolic acid-0.2 ml, 1.5% alcoholic solution of bromthymol blue-0.2 ml, 1% peptone water-100 ml) has been used by the authors for the last 4 years in daily practice for bacteriological control of feeding items. The initial color of the medium is cherry-violet; in the presence of growth, in the medium, of colibacillus, at 43° for 18-20 hrs, the color changes to bright yellow and a uniform turbidity appears. Comparison with usual three-stage assay shows the reliability of the Siroco medium. Items checked include clean china, bread and bread racks, dining tables, hands and clothing of service personnel, pots and pans. No references.

USSR

UDC 613.6:(378.661:378.12)

PROBLEMS OF LABOR HYGIENE AND CONDITION OF HEALTH OF INSTRUCTORS IN MEDICAL COLLEGES

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
23 Sep 76 pp 35-40

SEMENOVYKH, G. K., First Moscow Medical Institute imeni I. M. Sechenov

[Abstract] The author has studied the subject area with the aid of a "questionnaire for instructors of a medical vuz" sent to 10 medical institutes of the RSFSR. More than 1700 people (895 women and 806 men) over 31% of the professional-instructor staffs, responded. Of the respondents, 60.37% were candidates of sciences, 8.58%, doctors of sciences; 149 departments were queried with 40 professors, 321 docents, and 1191 assistants and instructors; 890 lectured; 665 are working on doctorate or candidate dissertations. The study revealed an inadequate foundation for both general standards for teaching work and norms for executing individual types of the work, and this leads to teaching overload of

instructors, to increase in work time schedules, to an irrational form of living, to the manifestation of fatigue and overfatigue, and promotes formation of cardiovascular pathology. Measures to improve working conditions of scientific-pedagogical cadres of vuzes should be undertaken with due regard for the features of work in the various responsible groups. Tables 3; References 1 (Russian).

USSR

UDC 612.2-036.12-084.3

CHRONIC RESPIRATORY DISEASES ACCORDING TO THE RESULTS OF A QUESTIONNAIRE INQUIRY

Moscow KLINICHESKAYA MEDITSINA in Russian No 12, 1976 signed to press
17 Apr 75 pp 46-49

ZAKIN, M. M., DOVGAN', YE. G., KLIMANSKIY, V. A., and SHERMAN, A. SH.,
All-Union Scientific Research Institute of Clinical and Experimental
Surgery, Ministry of Health USSR, and Tuberculosis Prophylactic Dispensary
No 11

[Abstract] To detect individuals in need of medical care and to assess the incidence of chronic respiratory diseases among the adult population of Dzerzhinskiy Rayon in Moscow, 5950 persons who received fluoroscopic examinations in the Tuberculosis Prophylactic Dispensary No 11 were asked to fill out questionnaires designed to elicit information about possible symptoms of chronic respiratory diseases. A total of 764 (12.8%) persons exhibited some of the commonest symptoms: 13.8% of the men and 9.3% of the women had a chronic cough, 6.4% and 3.7%, respectively, discharged copious sputum, and 4.4% and 2.9%, respectively, had both symptoms. Either or both symptoms were much more common in persons over 40 years of age and they were more than twice as frequent in men and women smokers as in nonsmokers. Subsequent physical examination of 556 of the respondents with symptoms disclosed the presence of chronic respiratory disease in 140 or 2.4% of the total number of those who filled out the questionnaires: chronic bronchitis in 94, bronchial asthma in 22, chronic pneumonia in 13, other chronic respiratory diseases in 4, pulmonary tuberculosis in 4, and pulmonary or laryngeal carcinoma in 3. Table 1; References 3: 1 Russian, 2 Western.

USSR

UDC 614.2:33

URGENT PROBLEMS IN THE ECONOMICS OF PUBLIC HEALTH CARE

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL in Russian No 10, 1976 pp 69-72

SHILENKO, YU. V., and KORCHAGIN, V. P., All-Union Scientific Research Institute of Medical and Medical Technological Information, Ministry of Health USSR; Scientific Research Institute of Labor

[Abstract] Based on the current state of development of the Soviet national economy, it is necessary to solve the question of the position of public health care in the economics of the development of socialism. The developing socialist society is characterized by a high level of consumption of goods and services including medical services. In the USSR the annual cost of public health care is about 14 million rubles. Economics specialists will be needed to efficiently use the resources in broadening and improving the base of health care in USSR. Implementation will affect all aspects of the economy. The pace and proportion of resources devoted to public health care are some of the most studied aspects of the national economy, and some theoretical and practical aspects are yet unsolved. The 25th Congress of the Communist Party placed emphasis on improving all aspects of medical services in the country in accordance with the Five-Year Plan (1976-1980). Attention will be given to construction of outpatient polyclinics, especially in newly developing and agricultural areas, a system of home treatment, improved hospitalization (up to 3.3 million beds), development of a standard basis according to work, capital investments, expenditures, improvement and more efficient methods of treatment and prophylaxis, analysis of effectiveness of division and coordination of work of physicians and other categories of medical workers. The development of a list of medical-prophylactic and sanitary-antiepidemic measures on a foundation of medical-economic bases, calculation and information is, thus, the most urgent problem in the economics of public health care. References 2 Russian.

USSR

UDC 614.7(47-25)

HYGIENIC PROBLEMS IN THE AREA OF PROTECTION OF THE MOSCOW ENVIRONMENT

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 12, 1976 pp 12-16

SHITSKOVA, A. P., professor, corresponding member Academy of Medical Sciences, USSR, and KRUTIKOV, G. N.

[Abstract] A goal has been established to convert Moscow into a model communist city with comfortable, planned, contemporary architecture, a high level of public services and sanitary-hygienic conditions. The

problems are complex since Moscow is one of the largest cities of the world and is a political, industrial and cultural center of great historical, international and political importance. The State is directly involved with sanitation in the vicinity of the city. The 1935 General Plan for reconstruction of Moscow had great influence on the building of the city, and as a result Moscovites live in one of the best-designed cities of the world with improved sanitary-hygienic conditions, increased water supply and heating supply, excellent sewage system, and decreased atmospheric pollution. Smoke and sulfur in the air have been decreased by 3 and 1.5-fold, respectively. A New Plan was adopted in 1971 and was based on a scientific prognosis with participation of sanitation physicians, medical institutes and scientific researchers. Plans and developments as a result have been numerous. Population density and land use have been regulated. Older areas have been reconstructed and parks created. A "green belt" encircles the city as an area of clean air and a place for townspeople to rest. Transportation has improved. High-rise apartments (9-12 stories) have been built and improved with garages, swimming pools, solariums, additional insulation and other improvements, although hygienists are concerned that condensed living may increase infectious childhood disease. Studies are in progress to compare living conditions of people in typical dwellings with those in the apartments. Research data on the maximum permissible concentration of toxic substances in the air are used as a compulsory component of any building project involving air-polluting industry. Liquidation of boiler rooms, conversion to oil and gas heat, changes in technology and use of pollution control devices have substantially improved the Moscow air. Reservoir management and elimination of soil pollution are planned. Pollution is monitored in the region around Moscow. The Moscow-Volga canal was constructed to meet the water needs. Complex hydrotechnical and water treatment and sewage treatment construction has allowed the river to be used in the best interest of the people. Two new recycling plants and one new little disposal plant are planned. Noise pollution is controlled by zoning of industry or shops that are noisy, use of newer trolleys, buses, cars, prohibition of noisy honking by trucks, creation of truck routes and planned tunnels and subterranean passages.

USSR

UDC 614.73-073.5

USE OF CHERENKOV RADIATION TO MEASURE ACTIVITY OF BETA-EMITTING ISOTOPES OF CERTAIN METALS

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
20 Apr 76 pp 114-115

KRETOVA, L. G., and YURASOVA, O. I., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] The authors have shown it to be possible to use Cherenkov radiation to record hard beta-radiation of ^{140}Ba + ^{140}La , ^{86}Rb , ^{204}Tl , ^{65}Ln , $^{110\text{m}}\text{Ag}$, and ^{32}P . Measurements in aqueous solution were made in a scintillation liquid spectrometer, "Mark II," (made by the company "Nuclear Chicago"), at a constant temperature of 8° in 10 ml glass counting cuvettes. Efficiency of count is directly related to the magnitude of the maximal energy of the beta-radiation of the isotope. (Buchtela and Tshurlovits, 1975). The biological application of this method is described in detail for measurement of ^{140}Ba + ^{140}La in rat organs and tissues. References 4 (Western).

USSR

UDC 616.632.799.3.027.237-074

DETERMINATION OF URINE CONTENT OF NEPTUNIUM-237

Moscow GIGIYENA I SANITARIYA in Russian No 2, Feb 77 signed to press
10 Jun 76 pp 59-61

SEMOCHKINA, L. S., and GOLUTVINA, M. M., candidate of chemical sciences

[Abstract] Np-237 usually accompanies isotopes of plutonium and uranium; analysis of urine samples should attempt to distinguish between these elements. The authors suggest a method to assay Np-237 in urine in the presence of isotopes of Pu and U. The sensitivity of the method is 0.5 decay/min in the sample. In measurement of a preparation with the cited activity, in the course of 40 min, the relative error is $\pm 30\%$. The chemical yield of Np-237 is equal to $83 \pm 6\%$. Coefficient of purification of the isotope from plutonium is 40, from uranium 1×10^3 . Assay of the alpha-activity in a layer of a hard scintillator permits recording activity with an efficiency of 95-100%. This significantly decreases the time required for assay of the sample, and, consequently, lessens duration of analysis. Figure 1; Table 1; References 1 (Western).

Therapy

ROMANIA

UDC 617.7-007.681:615.761

OCULAR HYPOTENSIVE MEDICATION ADMINISTERED BY GENERAL ROUTE

Bucharest VIATA MEDICALA in Romanian No 10, 1976 signed to press 28 Feb 76
pp 293-296

SCHWARTZENBERG, Tikwa, Ophthalmological Clinic, Iasi

[Abstract] The main hypotensive substances are included in the group of osmotherapeutical substances (glycerol, mannitol, urea, ethyl alcohol); hypotonic sulfonamides (acetazolamide); general anesthetics (hexamethonium); vasomotor agents (catapresan, hydergine). Osmotherapeutical substances and hypotonic sulfonamides are the most frequently used agents. They are recommended in the preoperative hypotonization of the eyeball in simple cataract or in cataract combined with glaucoma, acute glaucoma, malignant glaucoma, and so on. They are also used in the postoperative stage or in long-term treatment in inoperable glaucomatoses. The effect and mode of action of these substances are discussed. The mode of administration and doses are pointed out. Urea and mannitol may be combined, with resulting reciprocally potentiated actions. Some untoward side effects may occur, involving nausea (glycerol), pressure rise in a hypertensive (urea), polyuria and acute pulmonary edema (mannitol), dizziness, and gastric phenomena (acetazolamide). In order to prevent accidents prior to perfusion a general cardiovascular examination and a renal analysis are required. References 15.

ROMANIA

UDC 618.8-009.83/-083

GENERAL CARE AND TRANSPORTATION OF COMATOSE PATIENTS. PROGNOSTIC RAMIFICATIONS

Bucharest VIATA MEDICALA in Romanian No 10, 1976 signed to press 12 Feb 76
pp 309-312

ARSENI, C., and ALEXIANU, D., Neurosurgical Clinic, Medical-Pharmaceutical Institute, Bucharest

[Abstract] The conclusions of observations on and care of 300-500 patients over a 17-year period are given. The authors specify the term of coma and give a classification of comas. In most patients studied the most affected organs included the brain and lung. In the case of brain lesions the comatose patient required the specific care involved in the disturbance which caused the appearance of the coma and nonspecific care for the brain disturbance. The treatment of lung lesions included, besides specific medication, also complex physiotherapeutic management. The epidemiological

bacteriological problems of pulmonary lesions in comatose patients involve special aseptic measures in actions on the respiratory system. The authors discuss the significance of combating brain edema and ensuring hydroionic and nutritional equilibrium. Emphasis is placed on recovery therapeutics including pulmonary physiotherapy and mental recovery. The patient should be transported only after first aid has been administered. During transportation circulatory and respiratory therapeutics are administered.

USSR

UDC 617.55-005.1-073.432.19

ULTRASONIC DIAGNOSIS OF ABDOMINAL BLEEDING

Moscow KHIRURGIYA in Russian No 1, 1977 pp 89-93

DUBROV, E. YA., doctor of medical sciences, and CHERVONENKIS, A. V.,
Scientific Research Institute of First Aid imeni N. V. Sklifosovskiy,
Moscow

[Abstract] The ultrasonic method of detecting abdominal bleeding is based on the separation between the normal close parietal and visceral peritoneum in the lateral portions of the abdomen caused by the accumulation of blood. It was tested on 150 patients with suspected abdominal bleeding (85 with closed abdominal injury and 65 with gynecological disorders). A comparison of the results with those of roentgenographic and endoscopic examinations, findings at operation and at autopsy revealed a coincidence of diagnosis in 136 cases, 9 false negatives and 5 false positives. The minimum quantity of blood reliably detected in the abdomen by the ultrasonic method is 200 to 250 ml. Figure 1; Table 1; References 7: 6 Russian, 1 Western.

USSR

UDC 614.1:313.13+616-082]-057:656.61

DISEASE INCIDENCE AND MEDICAL PROTECTION OF SAILORS DURING EXTENDED VOYAGE

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 12, Dec 76
pp 26-28

UTKINA, M. D., Central Basin Hospital imeni Semashko, Arkhangel'sk

[Abstract] High relative humidity and low temperature both summer and winter in northern latitudes are unfavorable for human health. Ship personnel on the upper deck, repair crews and divers had most problems. The basis of medical protection in cold climates must take into account the possible unfavorable influence of extreme factors, prophylaxis of catarrhal disease, trauma and the skill of timely medical help in critical cold or freezing situations. Disease incidence also increased on tropical voyages, fatigue increased and work capacity decreased. Most health problems occurred in the first 40-50 days even on trips of 9-10 months. The abrupt change from a tropical climate to a northern one results in loads on the cardiovascular and respiratory systems that can cause derangement of compensatory mechanisms. Some effects were lack of sleep, change in mood, development of vascular pathological reactions and chronic sickness. Other medical problems in extreme climates were bronchitis, pneumonia, ear infection, dermititis, eczema, furunculosis,

hyperhidrosis of feet, and gastrointestinal disorders. Much depends on the ship doctor whose duties include antiepidemic measures, maintenance of quarantine, prevention of contact with native peoples to avoid malaria, typhoid fever and other tropical diseases, inspections, care of minor medical and major surgical problems, pre-voyage inspection and stocking of the dispensary, and competence in aspects of nutrition, sewage and sanitation. The frame of mind of the command, the psychological compatibility of the crew and provision for physical exercise are also important.

USSR

UDC 616.3-073.65

THERMOVISION AS A DIAGNOSTIC TECHNIQUE IN GASTROENTEROLOGY

Moscow SOVETSKAYA MEDITSINA in Russian No 12, 1976 signed to press
25 Nov 75 pp 98-101

SUKHAREV, V. F., Leningrad Scientific Research Institute of First Aid
imeni I. I. Dzhanelidze

[Abstract] Thermographic studies were run on 852 patients with various abdominal diseases and an analysis was made of 335 cases in which the diagnosis was confirmed at operation or by morphological examination of surgical or autopsy material. Location of the hyperthermic zone, intensity of infrared radiation, and magnitude of the drop in temperatures proved to be the most useful in diagnosing disorders of the hepatic-pancreatic-biliary system and gastrointestinal tract. Thermography was particularly valuable in acute inflammatory processes or exacerbations of chronic inflammations because of the sharp increase in intensity of infrared radiation, which was reflected on the thermograms in the form of pronounced thermal asymmetry. Thermal asymmetry was indistinct in, for example, chronic cholecystitis or pancreatitis, cirrhosis of liver, and cancer because of the slight quantity of heat generated by these diseases. Tumors were detected in only half the patients. Thermograms of patients with chronic gastritis or peptic ulcer did not show any of the characteristic changes expected. References 3: 2 Russian, 1 Western.

USSR

UDC 616-056.3-022.854-085.37

SPECIFIC ANTIGEN AEROSOL THERAPY OF POLLINOSES

Moscow KLINICHESKAYA MEDITSINA in Russian No 12, 1976 signed to press
24 Nov 75 pp 58-64

MOSHKEVICH, V. S., BEKLEMISHEV, N. D., and KRAVTSOVA, T. K., Kazakh
Scientific Research Institute of Epidemiology, Microbiology, and
Infectious Diseases, Alma-Ata

[Abstract] Five years' experience with the treatment of pollinoses by aerosols of dust allergens (362 patients with chronic respiratory allergies due to hypersensitivity to plant pollen) revealed the method to be more effective than the classical injection method. It benefited even those previously treated unsuccessfully by subcutaneous injection of the antigens. The new technique of inhalation therapy produced few complications and had no pathological effects on the blood and other systems. The results generally varied with the dose, duration of treatment, season, and some other factors. The efficacy of the therapy is ascribed to the fact that the specific antigens used desensitized the mucosa of the respiratory tract, the site where the antibodies responsible for hay fever and other pollinoses are produced and largely concentrated. Tables 3; References 28: 14 Russian, 14 Western.

USSR

UDC 616.681-006.2.04:612.017]-079

CELL IMMUNITY IN PATIENTS WITH TESTICULAR TERATOBLASTOMA STUDIED BY THE METHOD OF ROSETTE FORMATION

Leningrad VOPROSY ONKOLOGII in Russian No 12, 1976 pp 6-10

KUPIN, V. I. and OREL, N. F., Oncological Scientific Center, Academy of
Medical Sciences USSR, Moscow

[Abstract] Cell immunity was studied in 23 patients with testicular teratoblastoma before and during chemotherapy using Biozzi's reaction of spontaneous rosette formation as modified by A. A. Pukhal'skiy. (Biozzi's method is useful in evaluating the functioning of thymus-dependent lymphocytes, which play an important role in cell immunity). T-cell immunity was found to be markedly depressed in all patients as the disease progressed, but the reactivity of the cells was restored when the process became stabilized and during clinical remissions. There was a distinct relationship between rosette formation, chorionic gonadotropin, Abelev's reaction, and the course of the disease. Thus, studies on lymphocyte function using the reaction of rosette formation can be useful in evaluating the efficacy of chemotherapy and in making an objective prognosis. Figures 3; References 15: 8 Russian, 7 Western.

Veterinary Medicine

YUGOSLAVIA

LEPTOSPIROSIS IN CATTLE IN BOSNIA AND HERCEGOVINA

Belgrade VETERINARSKI GLASNIK in Serbo-Croatian Vol 30, No 12, pp 993-999

SUDARIC, F., doctor, NADAZDIN, M., doctor, and HADZIMURATOVIC, M., doctor, Veterinary Faculty Sarajevo; BULIC, C., and SIVCEVIC, A., veterinarians, Veterinary Station, Maglaj

[Text-English language abstract supplied by authors] The authors have presented the first description of leptospirosis in cattle in Bosnia and Hercegovina. According to the ammesis of the regional veterinarians, several cows died sporadically which had red milk, urine and feces, with diarrhoea, elevated temperature on which were febrile and the erythrocytes were reduced to 1,500,000 even on the third day. On section of the dead or slaughtered cows, the veterinarians detected severe icterus and anaemia of the subcutaneous tissue, as well as severe icterus of the liver. In the pathomorphological examination the above mentioned changes were also found and subcutaneous red edemas, abomasitis et enteritis acuta, hemo-chromatosis of the kidneys or spotty hemorrhages on the cortex, red urine, feces and milk, enlarged lymph nodes, in particular the mammary ones. In the pathohistological examination of the dead and slaughtered cows the following was found: myocarditis, necrosis hepatitis, nephritis, mastitis et lymphonodulitis lymphonodulorum supramammarium, hyperplasia substantiae lymphoreticularis of the spleen and other lymph nodes of the body. The agglutination test of two slaughtered cows and several investigated sera of the clinically healthy cows was positive to *Leptospira pomona* in the titre 1:1.000. The cows were affected with abortions sporadically from the spring to the autumn. On the basis of the amnestic data of the regional veterinary surgeons, clinical, pathoanatomical and pathohistological findings and the data in the literature, the authors classify their cases as an acute and subacute form of leptospirosis. Figures 4; References 27.

YUGOSLAVIA

CLOSTRIDIAL ENTERITIS IN CALVES

Belgrade VETERINARSKI GLASNIK in Serbo-Croatian Vol 30, No 12, pp 1001-1008

MATEJIC, Milanka, doctor, docent, and KNEZEVIC, Miljana, assistant, Veterinary Faculty, Belgrade; RADOVANOVIC, M., and VALTER, D., Veterinary Institute, Belgrade; FEREMINOV, B., dipl. vet., Poljoprivredni Kombinat, Kovin

[Text-English language abstract supplied by authors] In the spring of 1976, clostridial enterotoxemia in calves was detected on two different

farms in Yugoslavia. The calves were 25 and 40 days old or even up to 3 months. In the clinical picture which was uniform for all the observed calves, predominant were opisthotonus and diarrhoea and in the pathomorphological findings diptheroid-necrotic and hemorrhagic jejunitis and ileitis--described in the paper in detail. A definite diagnosis was established on the basis of the bacteriological proof of *Clostridium perfringens* type C. Considering the modern conception of clostridial infections, a significant problem has been discovered in the pathology of our cattle breeding. Figures 6; References 15.

YUGOSLAVIA

CHANGES OF PROTEINS AND MINERALS IN THERMALLY TREATED MEAT OF FROZEN FISH

Belgrade VETERINARSKI GLASNIK in Serbo-Croatian Vol 30, No 12, pp 1039-1045

KATANIC, Danica, doctor, KEPCIJA, D., docent, and BABIC, Ljiljana, assistant, Veterinary Faculty, Belgrade

[Text--English language abstract supplied by authors) The basic chemical structure, the effect of freezing on the changes of solubility of proteins, the content of minerals (Na, K, Ca and unorganic phosphorus) and organoleptic properties of the thermally treated meat of fish (*Scorpeana scrofa*) and (*Merlucius merlucius*) have been examined in the paper. Changes of the solubility of proteins in water and 5% buffer solution of NaCl and the content of free Na and K ions during freezing depend on the fish species. The hard consistency, rough structure and insufficient juiciness of the thermally treated meat of *Merlucius merlucius* are the result of denaturation of proteins in the course of freezing. Tables 5; References 17.

USSR

UDC 631.22:69.025.3

HYGIENIC FLOORS FOR ANIMAL-HUSBANDRY BUILDINGS

Moscow ZHIVOTOVODSTVO in Russian No 10, 1976 pp 56-61

PLYASHCHENKO, S. I., professor, LETKEVICH, I. F., candidate of agricultural sciences, and ZHUKOVA, YE. V., veterinary physician, Belorussian Scientific Research Institute of Livestock Breeding, ZHIGALKOVICH, V. F., candidate of chemical sciences, VEYNER, B. B., candidate of technical sciences and SVISTUN, N. G., engineer, Minsk Scientific Research Institute of Building Materials

[Abstract] In a search of materials for floors of buildings in which livestock, such as cattle and swine, are maintained for a large part of the time, the Zoological Hygiene Department of the Belorussian Scientific Research Institute of Livestock Breeding, in collaboration with the Laboratory of Heat-Insulating and Polymer Materials of the Minsk Scientific Research Institute of Building Materials, has, since 1963, been conducting extensive research on new structural materials and on the development of new floor designs for animal-husbandry buildings on the basis of these materials. Three principal floor types have been developed: light concrete with a cement-sand coating, light concrete with a polymer cement coating, and light concrete with a rubber-cord [salvaged tire-casing] coating. The specifications and performance characteristics of the three types are discussed. Tables 4.

USSR

UDC 636.2:616.993

PROGNOSTICATION AND DIAGNOSIS OF HYPODERMYIASIS OF CATTLE AT THE PRESENT STAGE

Moscow DOKLADY VASKhNIL in Russian No 1, Jan 77 pp 34-35

YAMOV, V. Z., candidate of veterinary sciences; All-Union Scientific Research Institute of Veterinary Entomology and Arachnology (Submitted by academician A. A. Polyakov)

[Abstract] The present stage of the control of hypodermiyiasis of cattle is characterized by a sharp decrease in infestation of animals with *Hypoderma bovis* both in individual regions and in the Soviet Union as a whole. This is due to an intensive use of organophosphorus larvicides, which is however not quite innocuous either for the animal body or the resulting produce. The general autumnal chemotherapy is a forced measure made necessary by the lack of sufficiently developed methods of prognostication of hypodermiyiasis. The author has made a comprehensive study of

the parasitism of the first-stage larvae of *H. bovis* in the spinal canals and gives the percentages of the infestation of cows and calves with them, by months. He also determines the optimum time for its detection and recommends the use of Kuzovleva-antigen and the extract of a homogenate prepared from the first-stage larvae of *H. bovis*, to which 95.7-96.6% of the infested animals have reacted positively. References 3 (Russian).

USSR

UDC 591.5:53.096

DISTRIBUTION OF TEMPERATURE FIELDS IN CLIMATIC INSTALLATIONS FOR
EXAMINATION OF ANIMALS

Moscow DOKLADY VASKhNIL in Russian No 1, Jan 77 pp 38-40

VOLKUN, A. D., IGNATENKO, M. M., candidate of physicomathematical sciences, IVAKHNENKO, S. D., candidate of technical sciences, and SHIRAYEVA, YE. P., Odessa Branch of the Scientific Manufacturing Association "Agropribor" (Agricultural Instruments] (Submitted by academician I. A. Budzko)

[Abstract] The authors present a simple mathematical method describing temperature fields in climatic installations for examination of animals with a sufficient accuracy for practical purposes. The computational algorithm given may be used in engineering designs of laboratory climatic and respiration chambers. Fourteen formulas are presented. References 2 (American).

II. BEHAVIORAL SCIENCES
Physiological Psychology

USSR

UDC 615.214.001.33x615.214.03

CLASSIFICATION AND USE OF PSYCHOTROPIC AGENTS

Moscow KLINICHESKAYA MEDITSINA in Russian Vol 54, No 11, Nov 76 signed to press 19 Apr 76 pp 7-12

ZAKUSOV, V. V., academician, Academy of Medical Sciences (AMS) USSR, Institute of Pharmacology, AMS USSR, Moscow

[Text-English language abstract supplied by author] The author suggests a variant of the classification of psychotropic substances made on a pharmacological principle and chemical structure of the drugs. Each group of psychotropic substances is supplied with a general characteristic and enumeration of the main recommendations for their use in medical practice. A detailed description is given for benzodiazepine tranquilizers, and derivatives of diphenyl acetic acid. The stimulating effect of tranquilizers, their direct influence on the cortex, and antihypoxic properties are especially noted. Evidence of the participation of GABA-eric mechanism in the benzodiazepine derivatives activity is given as well as substantiation of the central cholinolytic effect of the derivatives of diphenyl acetic acid. The article also contains brief information on pharmacological stimulation of the nervous activity and antidepressants. Table 1; References 7 (Russian).

USSR

UDC 612.8.015+612.017.1+575.1

MOLECULAR-EPIGENETIC ASPECTS OF PHYLO- AND ONTOGENETIC MEMORY

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 13, No 1, Jan/Feb 77 signed to press 17 Feb 76 pp 3-10

BEREZIN, V. A., Dnepropetrovsk University

[Text-Russian language abstract supplied by author] A review has been made of the problem biological memory and stress has been laid on the unity, in principle, of all forms of memory--phylogenetic, immunological, and neuronal. This unity consists in the fact that the source of everything "new" in animal systems in phylo- and ontogenesis can be described in the framework of three principles: "generator of variability of matrices," "phenotypic expression of matrices," and "effective selection of matrices." Herein also consists the essence of the Darwinian approach to the memory problem in general. The three cited principles characterize the process of transformation of return information in living nature both on the level of populations, and on the level of individual living systems. They

indicate in what form can be realized the reverse flow of information from the environment to the body, leading to formation, in ontogenesis, of new adaptive reactions. Without entering into conflict with basic molecular biology and molecular genetics, they make it possible to explain the manifestation of new adaptations, accumulation of individual experience in ontogenesis, an unexpected "innate," genetic program. References 52: 21 Russian, 31 Western.

CSO: 1840

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