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A. HEMATOLOGICAL RESEARCH

"The Role of Interoceptors in the Regulation of the Coagulation of Blood. Report 2. Role of Vascular Receptive Areas of the Carotid Sinus and Aortic Arch in the Acceleration of Blood Coagulation in Acute Blood Losses," By D.M. Zubairov, Chair of Pathological Physiology of the Kazan Medical Institute, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 11, November 1957, pp. 48-52.

The role of vascular receptive areas of the carotid sinus and of the aortic arch in the acceleration of blood coagulation in acute blood loss was studied. Experiments were conducted on 29 rabbits and 10 dogs.

Three series of experiments were performed on rabbits, and in each series the animals were divided into controls and those whose sinus nerves were cut. It was found that in the anemized rabbits reflex acceleration occurred, while rabbits with denervated carotid sinuses showed weaker response to acceleration of blood coagulation. However, when the depressor nerves were undamaged, in these animals too, some acceleration of blood coagulation could be observed.

Next, the experiments were conducted on dogs with greater resistance to acute blood loss. Here too, the animals were divided into 2 groups. One group served as controls; the second one had their carotid sinuses, vagus nerves, and depressor fibers denervated. Again the picture of blood acceleration was similar. In dogs with undamaged innervation, the time of blood coagulation decreased considerably, whereas in the denervated animals acceleration was observed only in the first moments after anemization, and then was on the decrease. Likewise, no increase of the thrombin titer occurred.

"Transfusion of Cold-Resistant Blood in a Surgical Clinic," By Prof. N.I. Blinov and V.I. Andreyeva, 3rd Surgical Clinic of the State ordena Lenin Institute for the Advanced Training of Physicians imeni S.M. Kirov (Leningrad), Sovetskaya Meditsina, No 5, May 1958, pp 54-57.

The authors say that at the meeting of the Surgical Society imeni N.I. Pirogov, on November 10, 1954, A.D. Belyakov presented a report on a new method of blood preservation which he developed, and which permits to preserve the blood at temperatures below 0°C. To the blood thus preserved, he gave the name of "cold-resistant" blood. Laboratory tests

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showed that the blood preserved according to his technique remains in a fluid state at 15°C.

The authors further state that from 1955 on 176 blood transfusions to 98 patients were carried out in their clinic with full success. They discuss in detail the comparative results obtained by the transfusion of ordinarily preserved blood and the "cold-resistant" one. Among other advantages of the latter, they stress its increased coagulability. They also add that in 1955 N.G. Kartashevskiy made 31 successful transfusions with the same blood. Summing up, the authors express their opinion that "cold-resistant" blood possesses all qualities of blood preserved by the usual method. Moreover, the possibility of its preservation for longer periods, up to 60-70 days, at a temperature of -15°C to -16°C without loss of its biological properties, considerably increases its value as compared with the blood preserved according to the usual methods. The authors consider that in view of these properties of "cold-resistant" blood, it is to be recommended for use in those parts of the Soviet Union where temperatures are rather low and transportation is difficult.

"The Actual Problems of the Clinic of Blood Diseases," By Active Member of the Academy of Medical Sciences of the USSR Prof. Ye.M. Tareyev, Sovetskaya Meditsina, No 5, May 1958, pp 35-49.

In this long article, the author reviews some actual aspects and problems of blood diseases, their incidence, etiology, and pathogenesis. He speaks in particular of the changes in the reactivity of the organism to the environmental factors; of classification symptomatology; and especially of non-specific manifestations and peculiarities of the course of these diseases. However, most of his attention is devoted to the leukemias, and especially to acute leukemia. After discussing the subject in great detail, he concludes by saying that some of the blood diseases like the elukemias statistically show an increase of incidence. He explains this by better diagnostic methods and the greater life span, an increase in the number of irritating factors, as well as the reactivity of the individual persons. On the other hand, such blood diseases as pernicious anemia, scurvy, chlorosis, and professional intoxications have become much rarer.

He proposes the following classification of the therapeutic methods: 1. Remedies which desensibilize and generally normalize reactivity of the organism; 2. Remedies which arrest multiplication of the pathological cells - cytostatic, as well as antimetabolites; 3. Replacement therapy; 4. Anti-infection remedies; 5. General sparing regimen for patients, with the use of methods of reflex therapy.

B. CHEMOSYNTHESIS

"The Role of Chemosynthesis in the Production of Organic Substance in Reservoirs. II. A Study of Chemosynthesis in Silt Deposits by Means of C^{14}," By Yu.I. Sorokin, Institute of the Biology of Reservoirs of the Academy of Sciences of the USSR, "Borok." Mikrobiologiya, No 2, March-April 1958, pp 206-213.

Referring to his previous articles, the author stresses again the important role which the use of chemosynthesis may play in the restoration of the bacterial biomass in reservoirs. In this article, he makes certain suggestions, which he sums up as follows:

1. He proposes a more precise technique for determination of chemosynthesis in the silt deposits by means of C^{14}.

2. He has determined the amounts of chemosynthesis in the silt deposits of the Rybinsk, Gor'kiy, and Kuybyshev reservoirs. The greatest amounts of the daily increase of the organic substance of bacterial bodies through chemosynthesis (3-6 mgC/l.) were found in the frest slit deposits of the new reservoirs.

3. He gives the results of the study of the effect of temperature on the rate of chemosynthesis in the silt deposits, and the determinations of the temperature coefficient of chemosynthesis Q^{100} under conditions close to natural ones. This coefficient he found to be equal to 1.6-1.9.

4. He has established that the addition to the silt of easily assimilable organic substance, under conditions favorable to its anaerobic decomposition, increases by many times the rate of chemosynthesis. Thus, he has found that as regards energy chemosynthesis in reservoirs is connected with the anaerobic decomposition of organic substance in the silt deposits. The article is illustrated by 2 diagrams and 4 tables representing the findings of the author.

C. HYPOTHERMY

"International Symposium on Hypothermy Held in Yugoslavia," By A.D. Slonim, Fiziologicheskiy Zhurnal SSSR, No 8, August 1958, pp 783-784.

The author reports on the International Symposium on Hypothermy held in Belgrade between 29 September and 3 October 1957. Besides Yugoslav scientists, about 20 researchers from abroad took part in it. Among the latter were representatives of Italy, Poland, Czechoslovakia, the USSR, and France. The U.S.A. was also represented. Various aspects of the effect of hypothermy on the living organism were discussed.

"The Development of Hypothermia in the Direct Cooling of the Brain Through the External Integument of the Head," By V.N. Klykov, Chair of Normal Physiology (Head - Prof. P.M. Starkov) of the Kuban' Medical Institute, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 11, November 1957, pp 41-45

Seventeen experiments were conducted on cats in order to study the effect of cooling the brain through the external integument of the head. The cats' heads were wrapped in so-called "cold blankets" and the cooling was achieved by very cold water which was circulated through the blankets. Its temperature at the outlet was 2-5°C. Thermometry of the brain was performed simultaneously at 2 or 3 different levels inside the brain. At the same time, the temperature was also measured in the rectum.

It was found that during cooling, the temperature in the brain decreased more rapidly and markedly than in the rectum. At the end of the cooling, the average temperature of the brain was in the upper layer (cortex - 18°C, in the medial layer (subcortex) - 21.2°C, and at the base of the brain - 24.7°C. The average rectal temperature was 29°C. In general cooling was performed for 90 minutes. Restoration of the normal temperature took 94 minutes, and was done electrically.

The isolated refrigeration of the head was accompanied by changes in circulation and respiration. These changes are discussed in some detail by the author, and are tabulated in 2 tables.

After the restoration of the temperature to the initial level, the respiratory and circulatory functions became normal in the animals already on the second day, and no marked disorders of these functions were observed. The author concludes by saying that if the technique of cooling the brain through the external integument of the head is perfected further, this method might probably be used with success in cardiac surgery.

D. RADIATION

"The Effect of Colamine on Phosphorus Metabolism," By G.V. Kamalyan and G.V. Barsegyan, Chair of Biochemistry of the Yerevan Zoo-Veterinary Institute, Biokhimiya, No 6, November-December 1957, pp 971-975.

To ascertain the effect of colamine on phosphorus metabolism the authors conducted experiments on dogs, white rats, and rams. Radioisotope P^{32} was used in the experiments. The findings were as follows:

Upon the simultaneous administration of radiophosphorus and colamine (in doses of 6 and 60 mg./kg.) to dogs, the activity of P^{32} in the urine of the experimental animals decreases and increases in the blood. Colamine also increases the activity of the phosphorus fraction of the blood in dogs, in particular that of phospholipids.

In white rats, the administration of colamine in doses of 6 and 60 mg./kg. brings about a decrease in the elimination of radiophosphorus with the urine and feces, and an increase of the activity of P^{32} in all organs under study. Colamine in a dose of 600 mg./kg. causes on one hand a decrease of the activity of P^{32} in the bones, bone marrow and in the spleen of white rats, and on the other hand considerably increases radioactivity in all other organs under study. In white rats, colamine increases the activity of the phosphorus fractions of the liver.

In rams, the activity of total phosphorus and its separate fractions in the blood increases under the influence of colamine, (in doses of 60 mg/kg). Colamine increases activity of the total phosphorus, as well as its fractions in the organs under study. In particular, the activity of phospholipids in the liver and kidneys, and that of adenosine triphosphate in the liver and heart. The results of the investigation are tabulated in 4 tables.

"Elimination of Sr^{89} from the Rats' Organism Under Normal Conditions and Under the Influence of Parathyreocrin*, Campolon**, and Sodium Citrate," By O.A. Khomutovskiy, Institute of Physiology imeni O.O. Bogomolets of the Academy of Sciences of the Ukrainian SSR, Laboratory of Biophysics, Fiziologichniy Zhurnal, Vol. IV, No 2, March-April 1958, pp 249-256.

The object of the present study was to investigate the distribution in the tissues, and the elimination of Sr^{89} in normal white male rats of the "albino" breed. The animlas belonged to 2 age groups: one, 3-4 months old (weighing 150±10 g.), the other, 6-10 months old (weighing 180-240 g.).

Radioactive strontium was injected into the abdominal cavity of rats as a chloride and carbonate salt in physiological solution. The experimental data collected showed a substantial difference in the accumulation and elimination of Sr^{89} in rats of different ages. In a group of young rats, weighing 150±10 g., the accumulation of Sr^{89} per 1 g. of bone was twice as great as in older rats weighing 200±10 g. The author did not succeed in ascertaining the degree of accumulation of Sr^{89} in the soft tissues of these animals. A change in the dose of Sr^{89}, administered within the limits of 0.008 to 0.56 microcuries per 1 g. of body weight, had little effect on the content of Sr^{89} in the soft tissues.

Elimination of Sr^{89} with the urine and feces during the first 5 days was considerably less in rats weighing 150±10 g. than in rats weighing over 170 g.

When introduced into the abdominal cavity, the main quantity of Sr^{89} was eliminated with the urine, mostly during the first 2 days. The elimination of Sr^{89} on the 35th day after its administration constituted about 0.27% of the dose administered. The elimination of Sr^{89} from the rats' organism was considerably increased when administered simultaneously with Parathyreocrin, Campolon, and sodium citrate.

During 5 days, the experimental rats eliminated Sr^{89} with the urine and feces, 12-28% more than did the controls. Furthermore, it was much easier to bring about an increase of the elimination of Sr^{89} with urine and feces in rats weighing 150±10 g. than in rats weighing over 170 g.

The technique and results of the investigation are discussed in detail by the author and are illustrated by 7 tables.

Comment: *[Soviet parathyroid preparation described in Lekarstvennyye Sredstva, M.D. Mashkovskiy, Moscow, Medgiz, 1955, p 228.]
**[Soviet liver preparation described ibid., pp 270-271.]

"Absorption and Excretion of Vitamin B_1 Studied by Means of the Isotopic Method," By L.I. Grebennik and Zh.F. Zakharova, Laboratory of Biochemistry of the Division of Chemotherapy of the All-Union Scientific-Research Chemicopharmaceutical Institute imeni S. Ordzhonikidze, Moscow, Voprosy Meditsinskoy Khimii, No 2, March-April 1957, pp 86-90.

The authors studied the problem of the absorption and excretion of vitamin B_1 by means of isotopic methods. The experiments were conducted on white male rats. S^{35} labeled vitamin B_1 was introduced orally

and subcutaneously. The amount of radioactivity was determined after mineralization according to Pirie. The conclusions arrived at by the authors were as follows: 1. Five days after the oral introduction of S^{35} labeled vitamin B_1, 52.42% of it was excreted with the urine and 42.62% with the feces. 2. When labeled vitamin B_1 was administered subcutaneously, 81.73% of it was excreted with the urine and 7.12% with the feces. 3. Radioactive sulfur of vitamin B_1 recovered by means of isobutyl alcohol was excreted to the extent of 24.74% when vitamin B_1 was introduced orally, and to the extent of 58.95% when it was administered subcutaneously. 4. The major part of the S^{35} labeled vitamin B_1 was excreted within 24 hours after either oral or subcutaneous administration. A lesser amount of it was discharged on the second day, and very slight quantities were eliminated during the following 3 and more days.

"Isotopic Myelography with Radon," By F.M. Lyass, Scientific-Research ordena Labor Red Banner Institute of Neurosurgery imeni Academician N.N. Burdenko of the Academy of Sciences USSR, Voprosy Neyrokhirurgii, No 3, May-June 1958, pp 26-31.

Isotopic myelography with radon was carried out on 30 patients, and its results are described by the author in the present article.

His conclusions are as follows: 1. The method of isotopic myelography may help a neurosurgeon in many respects in determining the level of the localization of the process which compresses the tissue of the spinal cord, and serve as a corrective in the diagnosis of the location of the lesion; 2. Data provided by the isotopic myelography reveal much more exactly the state of permeability of the subarachnoid space than do liquor-dynamic tests. In the author's experience, the bubble of the radon mixture never halted in the place where there was no tumorous or other pathological process. If it did halt the existance of a pathological process disturbing the permeability of the subarachnoid space of the spinal cord was indicated. 3. Isotopic myelography with radon is a valuable additional diagnostic means in the complex evaluation of neurosurgical patients. Three graphs, 1 sketch, and 1 myelogram are provided.

"The Study of the Physiological Role of Polyphosphates in the Process of the Development of Aspergillus Niger with the Aid of P^{32}," By I.S. Kulayev and A.N. Belozerskiy, Biology and Soil Faculty of the Moscow University imeni M.V. Lomonosov. Biokhimiya, No 3, May-June 1957, pp 587-596.

An exhaustive study of the subject and of the results of the study which are tabulated in 7 tables and illustrated by a chromatogram and a radioautogram, was made by the authors with the following conclusions:

Determinations of the specific acitvity of various components of the acid-soluble and acid-insoluble fractions showed that their highest specific activity is linked with polyphosphates. This demonstrates the extremely important role of these phosphoric compounds in the activity of Aspergillus niger. Physiologically, most active are acid-insoluble polyphosphates linked with ribonucleic acid. Polyphosphates are probably formed in the acid-insoluble fraction. The transport of phosphorus from the mycelium to the spores occurs in the form of acid-soluble polyphosphates, constituting an important reserve which is utilized in the first stages of the development of Aspergillus niger, that is, at the time when the inflow of the phosphates into the germinating spore is being slowed down. During germination of the spores, the utilization of acid-soluble polyphosphates is possible only after their transformation into an acid insoluble fraction, where they are apparently activated and linked with ribonucleic acid.

"Certain Regularities in the Growth of Macrocolonies after Irradiation of Yeast Cells with -Rays of Radioactive Cobalt," By V.I. Korogodin, Chair of Biophysics of the Moscow State University, Biofizika, No 2, vol. II, 1957, pp 178-186.

The author made a quantitative analytical study of the effect of irradiation with -rays of radioactive cobalt on the yeasts Saccharomyces vini, strain Megri-139-B. He sums up his findings as follows:

I. By counting macrocolonies at different intervals of time, as well as by means of a statistical analysis of linear dimensions of 48 macrocolonies, it was possible to detect the existence of the radiation aftereffect in yeast cells which were irradiated with -rays of Co^{69} and which retained the ability of unlimited reproduction.

2. The radiation aftereffect is expressed by the reduction of the average speed of gemmation of such cells according to the law $E = a(1 - kD)$, where a is the average speed of gemmation of nonirradiated yeast cells. Such a dependence of E on D manifested itself after 48 hours following incubation, and was observed throughout the interval of doses from 0 to 70,000 r.

3. It was demonstrated that the extent to which various non-inactivated cells irradiated with the same dose were affected is uneven.

4. A simple and sensitive method of recording radiation after-effect in yeast organisms irradiated with low doses by means of determining the extent of dispersion of the dimensions of macrocolonies growing out from an irradiated suspension on a solid medium, is proposed by the author. The article is illustrated by 4 graphs and 1 table.

"Investigation of the Accumulation of Radioactive Iodine in Tumors by Means of Introducing It Into the Tumerous Organism Together with Globulins of Antitumorous Sera," By A.I. Danilenko and Yu.O. Umanskiy, Institute of Clinical Physiology imeni O.O. Bogomolets Academy of Sciences of the Ukrainian SSR, Division of Pathophysiology, Fiziologichniy Zhurnal, Vol. IV, No 3, May-June 1958, pp 369-375.

The authors injected antitumorous sera globulins intravenously into domestic hens. These antitumorous sera were prepared by means of the immunization of rabbits with tissues of hens infected with viral sarcoma. Furthermore, they contained radioiodine in the amount of 100 microcuries per 1 g. of protein.

The findings of the authors were as follows:

1. The highest concentration of radioiodine in the tumorous tissue of hens may be achieved by means of radioiodized globulins of antitumorous sera; 2. Upon its administration, 1.3-3.5 times more radioiodine is accumulated in the tumors of hens than in the liver, kidneys, skin, thyroid gland, and muscles; 3. In the tumors of hens which received radioiodized globulins of the antitumorous sera, 2.5 times more radioiodine was accumulated than in the tumors of hens which received only radioiodized globulins of the normal serum; 4. To illustrate the results, 2 tables and one graph are provided.

"A Study of the Metabolism of Adenosine Phosphoric Acid in Rats in Alloxan Diabetes with the Aid of Radiophosphorus," By A.V. Kotel'nikova and V.V. Solomatina, Laboratory of Physiological Chemistry of the Academy of Sciences of the USSR, Moscow, Biokhimiya, No 6, November-December 1957, pp 954-962.

The metabolism of adenosine phosphoric acid in the muscles and liver in normal rats, and in rats affected by a prolonged alloxan diabetes with the aid of radiophosphorus was studied by the authors. The findings were as follows:

In diabetes, the content of inorganic phosphorus in trichloracetic filtrates of the liver and in the muscles increased by 31% for the muscles and by 35% for the liver. Upon poisoning with dinitrophenol, an increase of inorganic phosphate in the trichloracetic filtrates of the muscles by 65%, and 60% for the liver was noted. Specific acitvity of inorganic phosphates of trichloroacetic filtrates of the liver was 10-20 times higher than that of the filtrates of muscles. The relative specific activity of the terminal phosphate of adenosine triphosphate in diabetes decreased in the liver, while it increased in the muscles. Upon poisoning by dinitrophenol the relative specific activity of the terminal phosphate of adenosine phosphoric acid decreased in the liver by 48% and increased in the muscles by 18%. In the liver of normal rats, adenosine triphosphate and adenosine diphosphate were found in equal amounts (50% of each). In diabetes, the total content of them and their ratio did not change. In the muscles of normal rats, the content of adenosine triphosphate averaged 83% and that of adenosine diphosphate, 17%.

The details of the analyses are contained in the 5 tables which accompany the article.

"On the Problem of the Development of Reactions of Radiation Aftereffect," By G.G. Polikarpov, Chair of Biophysics of the Moscow State University, Biofizika, No 2, Vol. II, 1957, pp 174-177.

The author made a quantitative study of the development of reactions of the radiation aftereffect. In the experiments, a hydrozoan Pelmatohydra oligactis was used. The findings are summed up as follows: The results obtained may be explained by the existence of 2 different types of reactions that lie at the root of the wave-like character of the radiation disease in hydras. The first group of reactions that produce shock phenomena and the early death of the hydras has an ordinary temperature coefficient, and is characterized by a latent period of short duration. On the contrary, the second group of reactions is initiated by much smaller doses and has a high temperature coefficient and a latent period of long duration. The said parameters, taken together, enable one to qualify the processes that produce rapidly appearing and passing shock phenomena in hydras as chemical reactions with non-branching chains. The second wave of disease has a distinctly autocatalytic character. It is highly probably that reactions of radiation aftereffect that are remote in time in hydras represent chain reactions with branching chains. The article is illustrated by 4 graphs and 1 table.

" The First Czechoslovak Reactor," By Yan Urbanets, Vestnik Akademii Nauk SSSR, No 6, June 1958, pp 82-86.

The first Czechoslovak nuclear reactor is described. Three photographs are provided.

"On the Condition of the Synaptic Structures on the Nervous Cells of the Spinal Cord of Irradiated Rats," By I.D. Lev, Chair of Normal Anatomy of the Military Medical ordena Lenin Academy imeni S.M. Kirov, Leningrad, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 11, November 1957, pp 109-113.

Because of the controversy as to whether, if any, effect is exerted by radioactive radiation on the condition of nervous cells of the brain and spinal cord, the author undertook an investigation of the problem. His study bore on the condition of the synaptic structure on the cells of the spinal cord in 5 rats irradiated with a dose of 450-600 r., which developed in them an acute radiation sickness. These synaptic structures underwent considerable changes. Some of them were altered from delicate eyelets or meshes into button- or mace-like structures and greatly enlarged nodules. Many cells were covered with synaptic structures affected by all kinds of hypertrophy: axosomatic, axodendritic, and axovasal. On the other hand, there was a considerable number of synapses which remained intact, thus proving the great elasticity of the nervous system and insuring optimal conditions for the life processes.

However, one cannot say that the changes in synaptic structure described are specific to radiation sickness of the nervous system, since this system is also sensitive to various pathological irritations.

"Radiosensitivity of Cell Organelles," By L.P. Breslavets, Institute of Biophysics of the Academy of Sciences of the USSR, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 3, May-June, pp 282-290.

The author makes a lengthy review of the controversial opinions about the question as to whether radiosensitivity is greater in the nucleus or in the plasma of cells. Having observed that the plant cell, besides the nucleus and the plasma, also contains other organelles, namely mitochondria and plastids, he expresses his opinion as follows:

A great many facts are cumulated concerning morphological and physiological changes of a cell and its structural components, i.e. organelles,

under the influence of various irradiations. Most of the investigations were devoted to the effect of irradiation on the nucleus and chromosomes. The majority of authors are inclined to consider a dividing nucleus as the most sensitive structural component of the cell.

Only a few, but very important data point to the greater radiosensitivity of the cytoplasm, and some authors suppose that physico-chemical changes of the plasma bring about a change of the nucleus. The changes of chloroplasts under the influence of irradiation are so great that they may cause a change in the life of the whole cell. Observations are available which speak of the greater sensitivity of the chloroplasts as compared with the nucleus. There are also many data which point to the greatest radiosensitivity in the mitochondria.

In the author's opinion the sensitivity of structural components and organelles of the cell depends on those tissues and organs in which the irradiated cells are situated.

The article is accompanied by several photographs, with relevant discussion on the effect of the various doses of irradiation to which cells were subjected.

"The Rate of Inocorporation of Radiomethionine into Tissues of Rabbits in Cramps Caused by Corazol and Electric Current," By V.I. Rozengart and M.N. Maslova, Laboratory of Biochemistry of the All-Union Scientific-Research Sanitary-Chemical Institute of the Academy of Medical Sciences USSR, Leningrad, Biokhimiya, No 6, November-December 1957, pp 647-653.

The authors studied the rate of the incorporation of radiomethionine into proteins of the brain, liver, kidney, and blood of normal rabbits and of those in which cramps were caused by Corazol and electric current.

Upon intravenous administration of radiomethionine to control rabbits, the highest rate of its incorporation into proteins is found in the kidneys and liver. Restoration of the proteins of the brain and of blood proceeds much more slowly. The amount of radiomethionine in the proteins of the liver attains a maximum after 60 minutes and decreases sharply after 120 minutes. In the proteins of other organs under study, the amount of radiomethionine rapidly increases during the first hour, whereas, during the subsequent 60 minutes radioactivity of the protein does not change substantially. Cramps induced by Corazol and electric current bring about a marked decrease of the rate of the incorporation of radiomethionine into proteins of all the tissues under study. Cramps induced by Corazol have no effect on the total amount of phosphorus contained in the proteins of the brain and liver of the rabbits.

The article is illustrated by a table, electroencephalogram, and graphs.

"At the Kiev Branch of the Ukrainian Society of Physiologists, Biochemists, and Pharmacologists," By T.I. Svistun and A.I. Silakova, Fiziologichniy Zhurnal, No 1, January-February 1958, pp 133-134.

A meeting of the Kiev branch of the Ukrainian Society of Physiologists, Biochemists, and Pharmacologists was held. It was devoted to problems connected with the biological effect of ionizing radiation on the living organism. The following papers were read:

"Present problems of the biological effect of ionizing radiation on the living organisms," by Corresponding Member of the Academy of Medical Sciences of the Ukrainian SSR Prof. O.O. Gorodets'kiy (Institute of Physiology imeni O.O. Bogomolets of the Academy of Medical Sciences Ukrainian SSR); "Elimination of radioactive phosphorus from the organism," by T.P. Sivachenko (Institute of Physiology imeni O.O. Bogomolets of the Academy of Medical Sciences Ukrainian SSR and Kiev Institute for the Advanced Training of Physicians); "Peculiarities of nucleoproteid complexes due to the effect of roentgen radiation on the organism," by Doctor of Biological Sciences O.P. Chepinoga (Institute of Biochemistry of the Academy of Medical Sciences of the Ukrainian SSR). The authors briefly give the contents of the above three papers, as well as a gist of the discussion that followed their reading.

"The Role of Sulfhydryl Groups and of Peroxide Compounds in the Mechanism of the Biological Action of Ionizing Radiation," By M.B. Gintsburg, Ye.M. Pandre and N.M. Binus, Ukrainian Scientific-Research Sanitary-Chemical Institute, Kiev, Biokhimiya, No 3, May-June 1957, pp 467-475.

The authors carried out experiments on white rats by irradiation them with lethal doses of roentgen rays (800, 1,000, and 1,200 r.). The object of the investigation was the ascorbic acid content in the tissues of the animals. It was found that 24 hours after irradiation of the rats, the amount of ascorbic acid in the spleen decreased on the average by 30%, and remained at this level during the subsequent investigations. Very little change was found in the liver and kidneys. In the presence of peroxydase, already after 20 minutes the decrease of ascorbic acid considerably surpassed that which was found in the normal tissues within 20 minutes. The difference became particularly marked within 48 hours after irradiation.

The second object of the study was to determine the effect of roentgen rays on certain tissue proteins and enzymes. It was found that within 24 hours after irradiation dehydrase activity decreased considerably in certain tissues, such as those of the brain and heart. Cathepsin activity increased within 24 and 48 hours after irradiation, and after that returned to normal. Myosin was the only enzyme the activity of which was decreasing during the experiments, attaining 33% of the inhibition level after 96 hours. Apart from enzymatic activity, the amount of sulfhydryl groups in the muscle proteins - myosin and myogen - was also studied. It was found that both proteins were fairly stable in regard to irradiation. Moreover, the authors made a comparison of the sensitivity of the tissues of normal and irradiated rats to thiol poisons. It was found that the sensitivity of irradiated rats to thiol poisons has markedly increased as compared with normal ones. This was particularly noticeable in respect to cathepsin.

The authors conclude by saying that under the effect of reontgen rays, peroxide compounds are formed in the tissues of the irradiated rats, and apparently the reactivity of sulfhydryl groups is increased. Detailed results of the experimentation are tabulated in 7 tables.

"On the Clinical Aspects of the Initial Stages of the Chronic Action of Ionizing Radiation on the Organism," By E.A. Drogichina, N.K. Byalko, I.A. Gel'fon, N.I. Ivanov, M.A. Kazakevich, T.B. Linevich, V.G. Osipova, V.I. Stepanova, M.N. Ryzhkova, Ye.A. Solov'yeva and L.G. Tsenterova (Moscow), Institute of the Hygiene of Labor and of Professional Diseases of the Academy of Medical Sciences USSR, Gigiyena Truda i Professional'nyye Zabolevaniya, No 2, March-April 1958, pp 3-8.

For 3 years, the authors had under their observation a group of persons who were in contact with various radioactive substances. This group consisted of associates of a number of scientific-research institutes and workers of industrial establishements. In this report, the authors present the clinical data they have collected concerning initial stages of the chornic effect of ionizing radiation on the organism.

"Cytology of Radiation Mutants of Actinomyces (Actinomyces Globisporus Streptomycini Kras.)," By A.A. Prokof'yeva-Bel'govskaya, S.I. Alikhanyan, O.N. Kapitonova, and L.I. Yerokhina, Laboratory of Radiation Genetics of the Academy of Medical Sciences of the USSR and All-Union Institute of Antibiotics, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 2, March-April 1958, pp 193-201.

The authors studied the following strains of Actinomyces globisporus streptomycini Kras.: 1) strain 58, isolated in the laboratory of N.A. Krasil'nikov; 2) LS-3, a strain from the Waksman collection; 3) LS-1 and 213 - strains obtained through irradiation with extra high doses of ultraviolet rays alongside with intermediate photoreactivation; 4) a vast group of mutants obtained in a series of experiments with strain 213. The results are summed up by the authors as follows:

1. Strains of Actinomyces globisporus streptomycini Kras. 58, LS-3, LS-1, 213 and 60 mutants of strain 213, obtained in a series of experiments throug irradiation with extra high doses of ultraviolet rays (10,000-15,000 erg/mm^2) and with intermediate photoreactivation, were investigated in relation to the morphology of the colonies grown on agarized media, the cytological structure of the mycelia and their antibiotic activity, under the conditions of submerged culture.

2. It was found that ultraviolet radiation causes distinct hereditary changes in the nucleoprotein components of the actinomycetic cells.

The mutants studied differ from one another and from the original strains in the following respects: a) in the character of basophilia of the protoplasm in phase I and II of submerged cultivation as determined by the peculiarities of the synthesis of ribonucleic acid; b) in the structure of the nuclear elements, content of desoxyribonucleic acid, and in their behavior during cell division. The peculiarities of the protoplasm of the strains determine the morphogenetic processes of the culture (type of growth of hyphae, the character of their branching, the form of the colony), its life cycle, and the peculiarities of the course of phase I and II in the development of the culture, as well as the length and capacity of the culture to early or late sporulation or to its complete inhibition. 3. Under the influence of ultraviolet radiation, producers of strptomycin (strains LS01 and 213) most often evolve the following five types of changes of structure and development of culture in the process of biosynthesis of the antibiotic: a) feebly sporulating mutants (activity 2,000-4,000 units/ml.); b) non-sporulating mutants (1,800-4,250 units/ml.); c) mutants with an inhibited phase II of development (0-300 units/ml.); d) intensively sporulating mutants (500-1,500 units/ml.); e) "proactinomycetic" mutants not producing the antibiotic.

The article is accompanied by five tables containing photographic illustrations.

E. NEW BOOKS

"New Books," Vrachebnoye Delo, No 2, February 1958, on the outside of the back cover, Kand. med. nauk B.A. Saakov. Gipotermiya, 160 str., tsena 7 rub. 15 kop. (GOSMEDIZDAT)
/Candidate of Medical Sciences B.A. Saakov. Hypothermy, 160 pp., price 7 rub. 15 kop. (GOSMIDIZDAT)/.

May be purchased from : Magazin Ukrknigotorga, Moskva, Arbat, 9.

This monograph treats of the reactivity of the organism in overcooling of the changes in the functional condition of the nervous system; and of the character of the course of hemotransfusional shock in hypothermy.