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SCIENTIFIC INFORMATION REPORT

Biology and Medicine

(28)

Summary No. 4509

12 April 1963

Prepared by

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SCIENTIFIC INFORMATION REPORT
Biology & Medicine (28)

This is a serialized report consisting of unevaluated information prepared as abstracts, summaries, and translations from recent publications of the Sino-Soviet Bloc countries. It is issued in seven series. Of these five, Biology and Medicine, Electronics and Engineering, Chemistry and Metallurgy, Physics and Mathematics, and Organization and Administration of Soviet Science, are issued monthly. The sixth series, Chinese Science, is issued twice monthly; and the seventh series, Outer Mongolia, is issued sporadically. Individual items are unclassified unless otherwise indicated.

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I. FEATURE ITEM

1. Partial Table of Contents of "Voyenno-Meditsinskiy Zhurnal,"
No 12, 1962

The following is a reconstruction of the table of contents of Voyenno-Meditsinskiy Zhurnal, No 12, 1962, as cited in Letopis' Zhurnal'nykh Statey, Vol 10, 1963. The numbers in parentheses following the article titles refer to the title number in the yearbook.

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3. "On the Organization of Specialized Medical aid to Burn Victims in Hospital Bases at the Front," by N. G. Ivanov and Ya. B. Kapilevich (29588)	10-12
4. "Pathophysiological Reactions That Aggravate the Development of Traumatic Shock During Severe Radiation Disease," by M. S. Lisitsyn and V. G. Mitrofanov (29442)	13-16
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9. "On the Spread of Adenovirus Diseases Among Servicemen," by L. I. Shironin (29563)	31-33
10. "The Decontamination of Airplanes," by N. I. Val'vachev and M. A. Zolocheskiy (29515)	34-35
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12. "The Effect of Some Flight Factors on the Pilot's Organism" (survey of the literature), by N. A. Agadzhanian, A. R. Mansurov, and V. G. Terent'yev (29813)	38-44
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18. "On the Use of Protective-Cleansing Bactericidal Paste With Furacillin (for the prophylaxis of dermatosis), by V. I. Filipchik (29788)	56-57

II. BIOLOGY

Biological Warfare

2. Soviets Report Bacteriological Warfare Activity of US Troops in West Germany

(This article on American troop maneuvers involving bacteriological warfare appeared in a West German paper; the Soviet handling of the article follows.)

"US Army Practices Bacterial Warfare With Helicopters in Upper Franken"; Frankfurt/Main, Frankfurter Rundschau, 14 Jan 63, p 2

"(Bayreuth, 13 Jan [German Press Agency]) The Upper Franken authorities have informed the populace on the weekend that in the course of present American maneuvers in various parts of the district, aircraft will spray colored liquid. There is no cause for unrest, since this is only colored water which 'represents bacteriological and chemical combat methods for practice purposes.'"

"News From Various Countries"; Moscow, Meditsinskaya Gazeta, 26 Feb 63, p 4

"Bonn: American troops in the Federal Republic of Germany are developing elements of bacteriological warfare. This was reported by the West German newspaper Frankfurter Rundschau in an article about repeated American studies in the southern part of West Germany. Local authorities warned the population that in the course of maneuvers American helicopters would spray a colored liquid imitating 'bacteriological and chemical combat methods.'"

Bionics

3. Bird's Wings Studied for Clues to More Efficient Airplanes

"Wings of Airplanes Which Do Not Yet Exist," by Eng
V. Gorelov; Moscow, Komsomol'skaya Pravda, 16 Feb 63,
p 4

This article discusses research being conducted at the Institute of Animal Morphology imeni Severtsov on the mechanisms of bird flight. Doctor of Biological Sciences Professor G. S. Shestakov heads the group of biologists -- V. E. Yakobi, T. L. Borodulina, and N. V. Kokshayskiy -- who are working on this problem, which is of great interest to aviation engineers.

The obvious fact that the more slippery the surface of the wing, the less resistance it will offer to the air currents and the more lifting power it will possess does not demand special proof. It never occurred to anyone to make airplane wings rough. However, Candidate of Biological Sciences T. L. Borodulina established that roughness does not hinder but, on the contrary, improves the aerodynamic qualities of the wing.

This is exactly so, for although the feathers of a bird's wing are closely adjacent to one another, they form a rough surface. T. L. Borodulina explains the mechanism of the flow of air around the bird's wing in the following manner: air molecules "sticke" in the villi of the feathers, forming a unique grease. In flight, the head winds, flowing around the wing. Glide not along the feathers but along the fine air layer "stuck" in them. The friction of air on air is much less than that of air on any surface, no matter how smooth.

Candidate of Biological Sciences V. E. Yakobi studied the question of the lifting power of split wings (the wings of a bird are split while those of airplanes are continuous). He discovered that thanks to the "grating" (reshetka) of large oar feathers at the end of the wing, its lifting power at the moment of take-off is significantly increased. The ends of a bird's wings have the same properties as the propeller of a piston-engine airplane. All of this, taken together, makes it possible for the bird to expend a remarkably small amount of energy in flight.

4. Bionics Creates New Devices

"According to Nature's Example"; Tbilisi, Zarya Vostoka,
25 Jan 63, p 4

The article mentions that Leningrad scientists have developed the following devices:

An "eye" modeled after the frog's, which reacts only to insects;

A storm-warning device, copied from the jellyfish, which can predict storms 14 hours in advance;

A flying machine, using principles of insect flight, whose efficiency is greater than that of the most contemporary airplane.

Exobiology

5. Exobiological Investigations To Play an Important Role in Solving the Problem of the Emergence and Evolution of Life

"Exobiology -- A New Branch of Scientific Research," by Academician A. A. Imshenetskiy; Moscow, Vestnik Akademii Nauk SSSR, No 11, Nov 62, pp 58-63

The author notes that scientists are giving increased recognition to research in exobiology, particularly to that phase of it which has the purpose of investigating the presence of forms of life beyond the earth and the effect of conditions in outer space on a living cell. This recognition has resulted, for the most part, from the movement of such research away from purely theoretical and hypothetical generalizations toward discussion of possible fundamental principles and an experimental approach. However, no matter what form any future investigations in exobiology may take, all current effort must proceed from what is known about life, and those criteria now used in the study of life on earth must be applied. When this method fails, methods of investigation must be changed radically, and forms of life which may be basically different from those on earth must be sought.

Marine Biology

6. Institute of Zoology and Parasitology Turkmen SSR Works on Breeding of Vegetarian Species of Fish

"The Future of the 'Ctenopharyngodon'"; Ashkhabad, Turkmenskaya Iskra, 7 Feb 63, p 4

The Institute of Zoology and Parasitology, Academy of Sciences Turkmen SSR, is continuing its work on the breeding and acclimatization of valuable species of fish -- the Ctenopharyngodon and the Hypophthalmichthys.

The institute hopes to obtain 1.5-2 million Ctenopharyngodon and Hypophthalmichthys fry in 1963. By the end of the Seven-Year Plan, this number will grow to 20-25 million, at least.

These fish are of great interest as biomeliators. They are able to destroy the vegetation of any reservoir in a short period.

Considering the good results that Turkmen scientists have obtained in breeding vegetarian fish, the Academy of Sciences USSR designated the Institute of Zoology and Parasitology of the Academy of Sciences Turkmen SSR the main scientific institution in the Soviet Union for the further exploitation of the scientific theme: "The biotechnics of the artificial breeding and cultivation of vegetarian fish and of their use of biomeliators."

Candidate of Biological Sciences D. S. Aliyev, head of the Sector on Hydrobiology and Ichthyology, will lead the group of scientific workers working on this problem.

A. O. Tashliyev is the director of the institute.

7. Fish Clear Ponds of Bulrushes Better Than Machines Can

"The Fish Replaces...the Machine"; Leningrad, Vecherniy Leningrad, 10 Oct 62, p 2

Recently a new species of fish was added to the nearly 100 species already inhabiting the reservoirs of Azerbaydzhan. This is the Ctenopharyngodon (belyy amur), which was flown to Azerbaydzhan from China, its native land.

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These fish are voracious and eat mainly bulrushes. Many ponds, estuaries, lakes, and especially artificial irrigation canals are overgrown with bulrushes against which machines have proved ineffective. Each Ctenopharyngodon, however, can eat from 3 to 5 kilograms of bulrushes daily.

The first batch of Ctenopharyngodon will be settled in the Divichinskiy estuary, which is currently 80% overgrown with bulrushes. Some will also be sent to the Malyy Kyzyl-Agachskiy reservoir.

Shortly one more batch of Ctenopharyngodon will be brought into the republic.

8. Murmansk Kelp Forms Underwater Jungle

"In the World of the Interesting -- Underwater Jungles";
Vil'nyus, Sovetskaya Litva, 15 Feb 63, p 4

"Workers at the Murmansk Marine Biology Institute of the Kola affiliate of the Soviet Academy of Sciences studied the stores of commercial algae along the banks near Murmansk. They found that kelp in this area reaches a height of 3-4 meters and forms an actual underwater jungle."

9. Soviets Catch Rare Fish Off Souther Labrador

"Rare Fish in Trawl Catches," by V. A. Rikhter and V. A. Ivanov, Baltic Scientific-Research Institute of Marine Fishing and Oceanography; Moscow, Priroda, No 1, Jan 63, pp 107-108.

"While catching fish off the shores of souther Labrador, we discovered a rather strange fish in a trawl raised from a depth of 300 m. In this region, the rade is conducted very intensively, and search boats work constantly. However, up until now no mention has been made of catching these fish. After returning to port, we determined that the specimen caught belonged to the suborder Ceratioidei, the species of deepwater anglers *Ceratias hölbolli* (Kröyer).

"This fish is black. It is 80 cm long. Its body is pear-shaped, compressed from the sides; the skin is studded irregularly with thorns; the eyes are very small and set high on the head; the mouth is almost vertical.

"The most surprising characteristic of this fish is a long slender mobile lure (stebelek-udochka) (a modified first ray of the dorsal fin) with a luminous organ on the end. Another lure is located posterior to the dorsal fin, significantly shorter than the first and minus the luminous organ. The lure serves to entice the tiny minnows and dotted cymatou on which the angler feeds. The first lure is 56 cm long; the second, 16 cm. The brahchial openings are small, resembling the letter 'C' in form, opening a little behind the thoracic fin; the abdominal fins are not present. The fish is found at depths of 360-1,400 cm.

"One other feature of the biology of the angler is extremely interesting -- the presence of parasitic males. They are much smaller than the females -- not more than 15 cm in length. At first, when the males are no longer than 2 cm, they lead a freely swimming form of life, but then they attach themselves to the abdominal side of the female's body and feed on the juices of her body. During this process, a reduction of their eyes and digestive system occurs. The parasitic form of life of the dwarf males ought to be considered, undoubtedly, an adaptation to a deep-water existence, provoked by a food shortage in the depths, and also by the difficulty of finding individuals of the opposite sex at reproduction time.

"Judging from a number of peculiarities in the structure of the body, the anglers lead a sedentary existence and often bury themselves in the ground, displaying the luminour organ outside as an enticement. The low temperatures close to the bottom of the water, obviously, hinder their diffusion in Labrador. The catching of anglers in this region testifies, perhaps, to a strengthened flow of the warm Atlantic waters.

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"Somewhat to the south, we began to catch fish which had not been encountered before. Thus, a ship of the Baltic Scientific-Research Institute of Marine Fishing and Oceanography caught a fish 22 cm long with phosphorescent spots along its belly on the northeast bank of the Flemish Cap, at 48°20' N and 43°00' W, at depths of more than 3,000 m. It resembled a snake in the form of its body, the design and metallic tint of its dark skin, and also its large mouth with long, sharp teeth. Later three specimens of the same fish were discovered in the stomachs of sea perch caught at depths of 300-360 m in the vicinity of the very same bank.

"According to American data (cf. B. V. Henri, B. Bigelow, and W. C. Schroeder, Fishes of the Gulf of Maine, Washington, 1953) (we did not succeed in finding them in our classifications), the fish caught were classified as Melanostomias spilorrhynchus of the suborder Stomiatoidei. Their biology has not been well studied. It is known that the males, as in the anglers, are much smaller than the females; in the adult state they do not feed at all. At the end of her lower jaw, the female has a long barbel of a very diverse form, also with a luminous organ, which is used as a lure. They assume that the barbel serves simultaneously as an external sense organ, perceiving the approach of prey. Some Stomiatoidei also have luminous organs inside the mouth cavity for luring prey."

[Photographs of the fish accompany the article.]

Microbiology

10. Culture Media for P. tularemse Patented

"Culture Media for Culturing the Tularemia Pathogen," by A. S. Leybenzon and Z. F. Luchshova, USSR Certificate of Authorship No 140956, 20.09.61 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B390P, by A. Shevelov)

"Directions for preparing solid culture media for culturing P. tularemse with the use of aminopeptide-2 are given. The highly sensitive, opaque medium with the addition of defibrinated blood guarantees the growth of one microbial cell with a yield of 3-3.6 billion microbial cells per one ml of medium. A transparent medium permits growth of P. tularemse after seeding organs of animals infected with tularemia (growth for 1-3 days after seeding of organs). A third variant of the medium with the addition of blood or bile is also suggested for seeding organs of infected animals."

11. Metabolism in Bacteria

"Enzymes and Their Significance in the Metabolism of Bacteria," by K. N. Buchnev, Tr. N.-I. Vet. In-ta, Kazakhsk, Akad. S.-Kh./Nauk (Works of the Scientific-Research Veterinary Institute, Kazakh Academy of Agricultural Sciences), No 10, 1961, pp 877-892 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B191, by G. Faizova)

"The author generalizes information concerning the relatively general biological significance and certain general properties of enzymes. A classification of enzymes is presented. The significance of processes of transamination in the metabolism of bacteria are evaluated separately."

12. Nucleic Acids and Spore-Forming Bacteria

"The Mineralization of Nucleic Acids With Certain Aerobic Spore-Forming Bacteria," by M. T. Kvaratsheliya and V. L. Belyayeva, Byul. Nauchno-Tekhn. Inform. po S.-Kh. Mikrobiol. (Bulletin of Scientific-Technical Information on Agricultural Microbiology), No 10 (2), 1961, pp 18-22 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B294, by A. Minenko)

"It was established that the capability of mineralizing nucleic acids on a Menkina medium is determined in different strains of Bac. megatherium by their relationship to the source of nitrogen supply. The authors suggest that all the representatives of the Bac. megatherium species can mineralize organophosphorus compounds. Silicate bacteria mineralize nucleic acids only under conditions which facilitate the acceleration of biochemical processes (agitation, an increase in culturing temperature). The greatest amount of P_2O_5 was freed from nucleic acids on Menkina medium during combined culturing of phosphorus (Bac. megatherium var. phosphaticum) and silicate bacteria."

13. Detection of Tuberculosis Mycobacteria on Contaminated Surfaces

"A comparative Evaluation of Methods of Observing Tuberculosis Mycobacteria Tagged With Radioactive Phosphorus on Different Surfaces," by M. I. Alekseyeva and G. D. Khudadov, Tr. Tsentr. N.-I. Dezinfects. In-ta (Works of the Central Scientific-Research Disinfection Institute), No 14, 1961, pp 77-86 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B402)

[No abstract given.]

14. Virus Structure Study

"The Structure of the Polyoma Virus," by N. A. Kiselev and I. S. Irlin, Institute of Crystallography, Academy of Sciences USSR, and Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR; Moscow, Biokhimiya, Vol 27, No 4 Jul/Aug 62, pp 656-662.

The studies reported showed that the SE Polyoma Virus Strain 2510 consists of a nucleus and a capsule. The protein capsule consists of 42 morphological subunits distributed with a 5:3:2 symmetry and forming a 12-facet icosahedron with an external diameter of approximately 430 Å. The morphological subunits forming the capsule have a 50-60 Å diameter, but in the radial direction, 40-50 Å. The forms of the morphological subunits in the orifice occasionally seen in them prove that they are not structureless spheres. The authors suggest that the morphological subunits consist of even more minute hypothetical (hypersubunits), presumably individual, protein molecules. The authors thank Prof L. A. Zil'ber and Prof B. K. Vaynshteyn for their initiative and guidance of this research.

15. Czechoslovak Inactivation of Aujeszky's Disease Virus

"Inactivation of Aujeszky Disease (Pseudorabies) Virus by Nitrous Acid," by S. Ivanicova, R. Skoda, V. Mayer, F. Sokol of the Institute of Virology of the Czechoslovak Academy of Sciences, Bratislava; Prague, Acta Virolologica, Vol 7, No 1, Jan 63, pp 7-14

The kinetics of inactivation of Aujeszky disease virus by nitrous acid was investigated using various concentrations of sodium nitrite, pH of the reaction mixtures, and temperatures. After an initial short, but very rapid, inactivation of an appreciable proportion of virus particles, the reaction was slowed down and proceeded further with an exponential rate. For the exponential portion of the inactivation curves, the rate of inactivation was proportional to NaNO_2 concentration and linearly dependent on the hydrogen ion concentration. The activation energy of the reaction was 15.2 kcal/mole. Attempts to isolate infectious deoxyribonucleic acid (DNA) from the virus by phenol extraction were unsuccessful, and thus the kinetics of inactivation of intact virus could not be compared with that of isolated DNA. It was concluded that the action of nitrous acid on the infectivity of the virus involved both viral DNA and protein. Virus inactivated by nitrous acid retained its immunogenicity. Rabbits immunized with the killed virus developed specific virus-neutralizing antibodies and showed resistance to challenge with homologous live virus. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the Publishing House of the Czechoslovak Academy of Sciences, 1963)

Radiobiology

16. Chemical Treatment of Gamma-Irradiated Oats

"A Decrease in the Harmful Effect of Gamma-Irradiation by (Co^{60}) Under the Effect of Gibberellic Acid and Potassium Salts," by M. M. Tushnyakova, Tr. In-ta Genet AN SSSR, No 28, 1961, pp 158-162 (from Referativnyy Zhurnal -- Khimiya Biologicheskaya Khimiya, No 17, 10 Sep 62, Abstract No 178768)

Large doses of gamma-rays from Co^{60} (15,000-30,000 roentgens), when administered to quiescent oat seeds, caused the death of these seeds during the germination period. Placing the irradiated seeds for 18 hours in solutions of gibberellic acid (10 mg/l) and one percent solutions of KCl and K_3PO_4 significantly decreased the harmful effect of gamma-irradiation.⁴

17. Effect of Alpha-Particles on Yeast Cell Division

"The Recovery of Viability of Alpha-Irradiated Yeast Cells of Different Ploidy," by V. I. Korogodin, V. Bilushi, L. I. Markova, and Ya. L. Shekhtman, Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk, Moscow State University imeni M. V. Lomonosov, and the Institute of Biological Physics, Academy of Sciences USSR; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 39-44

The capacity to recover uninterrupted cell division after alpha-irradiation (50 rad/min from Pu^{239} at a 13-mm distance, and 10,220 rad/min from Po^{210} at a 8-mm distance) was studied on yeast cells of 12 different species. The "effect for recovery" was evident in all strains possessing two or more chromosomal sets. It was shown that although the alpha-particles, as a whole, were more effective than X-rays or gamma-rays, with regard to their injurious effect on the capacity of the cells to recover division, an identical degree of injury to cell capacity to recover was caused by an identical dose regardless of the type of radiation causing the injury.

This phenomenon makes the author presume that the biological systems of cells whose injury leads to inactivation and those systems which determine the recovery of the injured cells are not identical and probably are spatially separate. Most probably, the former injuries are linked to the nuclear structures of the cells, while the latter are linked to the cytoplasmic structures which respond to metabolic processes.

18. Simultaneous Effect of Cysteine and Peroxides on Cell Division

"The Role of Free Cysteine Reaction With Peroxides in the Biological Effect of Ionizing Radiations," by V. N. Benevolenskiy; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 13-16

The inactivation of cell division in irradiated (30 and 50 kr from Cr^{60}) and unirradiated yeast cells (*Saccharomyces vini* strain Megri - 139-B) by means of the simultaneous addition of peroxides and free cysteine was studied.

The addition of free cysteine in 10^{-3} M and larger quantities to suspensions of irradiated (30 and 50 kr at 400 r/min) and unirradiated yeast cells that have been subjected to peroxides of hydrogen and of urea further suppresses cell division by peroxides. It is possible that this occurs as a result of the radicals that are formed during the chemical reaction of peroxides and cysteine.

Peroxides along aggravate radiation injury only when in toxic or subtoxic concentrations.

Peroxides in nontoxic concentrations added before irradiation exert, evidently, a mild protective effect on the inactivation of yeast cell division and intensify the antiradiation action of cysteine.

19. Bone Marrow Cell Regeneration Produces Nonviable Cells

"Disturbances in Processes of Bone Marrow Cell Regeneration in Rats Injured by Ionizing Radiation," by G. P. Gruzdev, N. K. Yevseyeva, L. N. Rozhdestvenskiy, M. I. Fedotova, and Ye. N. Shcherbova; Moscow, Meditinskaya Radiologiya, Vol 8, No 2, Feb 63, pp 35-41

The mitotic index, the total number of bone marrow cells and the number of chromosomal aberrations in bone marrow cells of rats irradiated by 400 r were determined.

The authors conclude that the mitotic index calculated for all of the bone marrow cells without considering its different components cannot characterize the change in the bone marrow mitotic activity during radiation sickness. Mitotic activity of the bone marrow erythropoietic series sharply rises on the third day of radiation sickness. This rise determines the restoration of bone marrow erythropoiesis.

Evidently, the bone marrow cells which divide while containing chromosomal injuries produce nonviable daughter cells which quickly die.

20. Combined Low Temperature and Irradiation Action on Enzymes

"Dehydrogenase Activity of Tissues Subjected to the Effects of Low Temperature and Ionizing Radiations," by Yu. K. Ledentsov, Sverdlovsk State Medical Institute; Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 29-32.

The activity of some dehydrogenases of the liver, muscle, and brain of rats subjected to the effects of low temperature and ionizing radiations was studied. The local effect of low temperature noticeably increased lactic dehydrogenase activity of the brain and liver, which is, evidently, a compensatory biochemical phenomenon of temperature regulation. A decrease in the activity of dehydrogenase of all of the organs that were studied, especially a marked decrease in the glutamic dehydrogenase of the liver, lactic dehydrogenase of the muscle, and succinic dehydrogenase of the muscle and of the brain, was observed due to the combined actions of low temperature and ionizing radiations. These data indicate the disruption of compensatory biochemical reactions in response to cold trauma induced by the predisposing radiation action.

21. Radiation Effect on Skin Tyrosinase

"Radiation Effect on Tyrosinase Activity of the Skin of Mice and Rats", by Ye. A. Ivanikaya and A. M. Kuzin, Institute of Biological Physics, Academy of Sciences USSR; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 17-20

Total irradiation of mice and rats by lethal doses causes the activation of skin tyrosinase during the first few hours after irradiation. Maximum tyrosinase activation of mouse and rat skin occurs during the 3-4 hour period after irradiation, followed by a slow drop during the first 24 hours. Biologically active orthoquinones increase during the first few hours after irradiation as a result of the activation of tyrosinase in the skin of irradiated animals. Substances of the adrenal system and free tyrosine, as is shown by these data, can serve as the initial substances.

22. Ruthenium Distribution and Absorption in Animals

"The Distribution of Ruthenium-106 in Different Animals,"
by L. A. Buldakov, Raspredeleniye Biol. Deystviye i
Migratsiya Radioakt. Izotopov (Distribution of Biological
Activity and Migration of Radioactive Isotopes), M., Medgiz,
1961, pp 79-82 (from Referativnyy Zhurnal -- Khimiya, Biol-
gicheskaya Khimiya, No 17 10 Sep 62, Abstract No 17 S 905,
author's abstract)

The distribution of ruthenium administered intraperitoneally to mice, guinea pigs, cats, dogs, and frogs is comparatively uniform. The intensity of the absorption from the peritoneal cavity and the excretion from the organism parallel the intensity of metabolism of the different animals.

Miscellaneous

23. Approach to Theory of Biological Organization Proposed

"The Dialectics of Biological Organization," by Z. V.
Kaganova; Moscow, Voprosy Filosofii, Vol. 16, No 12,
Dec 62, pp 63-73

As defined in the CPSU Program, the main objectives of contemporary biology are to explain the mechanisms of the development of the organic world, to study the physics and chemistry of living organisms, and to devise different methods of controlling vital processes, particularly metabolism and heredity.

The first step in arriving at a solution to these problems is to expound a theory of biological organization. The dialectic concept of biological organization involves the relationship between the tiniest particles and the largest organs of the living organism and between the organism and its environment, to produce a stable equilibrium throughout the lifetime of the entity. The internal unity of the living organism, which makes possible the very process of vital activity, has been found to be a result of the differentiation of the living body into components and the unification of these components in the total organism. The simplest forms of the movement of matter, i.e., physical and chemical, have not been lost in the life process, but have been retained in a subjugated manner together with the higher or biological, forms.

C-O-N-F-I-D-E-N-T-I-A-L

The study of biological organization is connected to an ever increasing extent with the application of physical, chemical and mathematical theories and methods of investigation. Isotope indicators, different kinds of microscopy, X-ray analysis, crystallography, spectroscopy, and chromatography are among the tools at the scientist's disposal in his quest to unify concepts of the evolution of matter. Information theory makes possible a more precise quantitative analysis of the form, structures, and control of biological organization.

Studies of life at the molecular level and the vital role of nucleic acids are referenced and reviewed briefly. The formation of atoms in the process of the evolution of matter is discussed.

At present, the author concludes, it is becoming more and more evident that a fruitful natural scientific solution of the problem of organization in biology depends largely on its correct philosophical solution. To answer the question of what biological organization, i.e., what the organism, is, investigators must explain the dialectical connections and relationships of mechanical, physical, chemical, and biological forms of the movement of matter and the objective mechanisms which correspond to them. To explain the nature of life processes at different levels of organization (at the level of the organism and at the microscopic, submicroscopic, molecular, and atomic levels), the investigator must have a clear philosophical representation of the mechanisms of the transition of one form of movement to another and of how general and particular mechanisms, properties of succession and discretion, qualitative and quantitative changes, the whole and its parts, similarity and difference, and other contrasts most precisely expressed and encompassed by the laws and categories of materialistic dialectics are connected and interact.

The development of a theory of biological organization and the use of its principles in different fields of biology have been found to be more effective the more consistently materialistic dialectics are used for this purpose as the logic of scientific research.

III. Medicine

Aerospace Medicine

24. Development of Aerospace Medicine in the USSR

"Space Biology Today and Tomorrow," by Academician
N. Sisakyan; Moscow, Aviatsiya i Kosmonavtika, No 1,
Jan 63, pp 10-15

Progress in aerospace medicine in the USSR is reported to have proceeded in five stages. The first stage consisted of preliminary laboratory experiments and studies which were initiated in 1951. Applied physiology, aviation medicine, radiobiology, and other contiguous sciences reached a sufficient level of development during that stage. This provided the theoretical groundwork for the initial biological experiments on high altitude rockets.

The second stage of development included experiments on dogs, rabbits, rats, and mice which were sent up in rockets to altitudes of 450-470 kilometers. A total of 18 dogs were used. A few of these were anesthetized.

Preparation for and launching of the second artificial earth satellite with Layka aboard inaugurated the third stage in the development of aerospace medicine. The fourth stage consisted of a series of space flights undertaken during 1960 and 1961. The second, third, fourth, and fifth space vehicles were successfully launched into space and returned to earth during the fourth stage of development of aerospace medicine in the USSR.

The fifth stage began with preparation for manned space flight and the successful re-entry of Gagarin, Titov, Nikolayev, and Popovich. Science is now familiar not only with the nature of the functional shifts produced in a human organism by various factors operating in an orbital flight, but also with the essential nature of reactions resulting from emotional stress. It was concluded that the ascent and descent of a space vehicle is not dangerous to human life. Whatever physiological shifts occur in a human astronaut are connected with a combination of factors which, together with neuroemotional stress, are of the nature of adaptive reactions.

But certain problems still await solutions. A sufficient foundation has been laid for further study of the effects of space flights of long duration on both the human and various other organisms, for further investigation of conditions and factors which would have a negative effect on passengers of a space vehicle, and for designing suitable protection.

C-O-N-F-I-D-E-N-T-I-A-L

Space travel of longer duration than has been possible to date requires the development of life support systems, vehicle control, and a workable method of disposing of body wastes.

Factors connected with space flight may be divided into three groups. The first is connected with the dynamics of flight such as multi-G forces, vibration, noise, and weightlessness. The second is connected with environmental conditions in outer space which require protection against radiation, and the maintenance of proper atmosphere and temperature within the space vehicle. The third group of factors consists of those connected with the length of time an organism can live in a hermetic cabin under such artificial conditions as isolation, limited space, abnormal diet, unaccustomed 24-hour periodicity, and microclimate.

Weightlessness is one of the last factors investigated. Attempts to simulate weightlessness on earth have met with little success. Basically weightlessness causes no substantial changes in human efficiency. Soviet scientists are searching for a way to create artificial gravitation to help restore normal pose and orientation in animals traveling through space.

Specialists of many branches of natural science are awaiting solution of the most puzzling problem of all: How widely diffused is life in the universe? What are its form and characteristics? One way to approach the problem is to conduct experiments in laboratories on earth to determine what would be the vital activity of terrestrial organisms under conditions existing in outer space and on celestial bodies. The only difficulty lies in our lack of knowledge of the nature of planets. The search for organic matter, substrata, and organisms beyond the earth that are similar or dissimilar to those existing on earth must be intensified.

25. Artificial Environment Beyond Outer Regions of Earth's Atmosphere Discussed

"Ecological System in Cosmic Flights," by Col Med Serv Ye. Shepelev; Moscow, Aviatsiya i Kosmonavtika, No 1, Jan 63, pp 20-25

The author of this article examines in general terms some of the more important forms of closed ecologies proposed for long manned space flight. One form of ecological system suggested depends solely on the use of unicellular algae and microorganisms. The technological superiority of such a system is irrefutable. Whether it is possible to feed a human in such a manner for a long period is not known. It is clear, however, that in any closed ecological system air regeneration

must be built around the unicellular algae. Higher plants, much richer in carbohydrates than algae, would also have to be used in manned space flights of long duration. Tuberos plants and plants with edible roots to which a human is accustomed might be used together with algae.

The selection of animals involves a large number of factors. The most important of these is increase in the biomass and the coefficient of energy utilized. Of greatest advantage seem to be the lower animals, particularly the minute inhabitants of ponds such as Daphnia and Cyclops.

Any ecological system must be well balanced if it is to function normally. Each element must remain in its proper relationship with all other elements. The larger the elements, the greater the danger of disruption of the system. Selection of a definite species of higher animals for a closed ecological system will have to be based on possible complete mechanization of their support. Some progress has already been made in this direction, because feeding has been mechanized in most advanced poultry raising establishments.

The possibility of employing a biological method of utilizing organic waste products has been thoroughly investigated by Professor G. G. Vinberg. The possible utilization of thermal decomposition (burning) of waste products must also be investigated. It is also necessary to take into consideration the fact that the most are based on complex natural biological behavior which encompasses relationships of living organisms with each other and with their environment. The new environment that man will encounter in outer space is of great interest, however.

26. Preparation and Training of Animals and Humans for Space Flights Discussed

Pervyye Kosmonavty i Pervyye Razvedchiki Kosmosa (The First Astronauts and the First Explorers of Outer Space), by Mariya Aleksandrovna Gerd and Nikolay Nikolayevich Gurovskiy, responsible editor V. I. Yazdovskiy; Moscow, Publishing House of the Academy of Sciences USSR, 1962, 199 pp

In this new booklet, the authors show how the latest findings in aerospace medicine can aid in furthering man-in-space effort. They discuss the work of Soviet scientists and the increased recognition they have been giving to research preliminary to exploration of outer space. Initiated soon after the war by a small but competent group of biologists, physicians, engineers, technicians, and laboratory workers, this research has borne fruit. Man-made satellites were found to be necessary to collect information that cannot be obtained under laboratory conditions on earth. Sending animals, and later humans, into space was found to be feasible.

C-O-N-F-I-D-E-N-T-I-A-L

Space technology has made astonishing progress in the USSR in the past 10-15 years. Much research has been directed toward a more complete understanding of the fundamental workings of the animal and human organisms. Much data has been collected on the laws that control life. A number of unusual factors, encountered by a living organism in outer space have been discovered. Some of these factors are cosmic radiation, weightlessness, acceleration, low barometric pressure, sharp fluctuations in temperature, noise, vibration, and isolation.

Dogs were the first biological objects sent into space in rockets. Dogs were selected because their physiology was well known and because they could be easily trained. The first and second sections of the booklet describe all the important work done in preparing dogs for space flight. Information dealing with the selection and training of human astronauts, as well as some scientific data obtained as a result of the flights made by Yu. A. Gagarin and G. S. Titov, is discussed in section three of the booklet.

Many points discussed in the booklet deal with changes that take place in the animal organism and with the physical condition and mental state of people during preflight training and actual flight in space. Any further progress in space exploration will require a number of experiments on animals. The purpose of these experiments will be to determine how to keep man functioning at peak efficiency and how to provide for his safety. It must be remembered that experiments on animals made initial human space probes possible.

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27. Areas of Moderate Elevation May Benefit Athletes in Training

"Changes in the Blood of Athletes at a Moderate Altitude,"
by D. A. Alipov, Chair of Human Physiology, Kirghiz Institute
of Physical Culture; Frunze, Sovetskoye Zdravookhraneniye
Kirghizia, Jan/Feb 63, pp 11-15

The author discusses results of his investigations of changes that take place in the blood of athletes during the first 10 days of their stay at an altitude of 2,100 meters and after their stay at that altitude for more than a year. A total of 84 men between 17 and 24 years of age were used in this investigation. No polycythemia was noted in athletes who ascended to an altitude of 2,100 meters. The erythrocyte count, however, was found to be higher than that in healthy individuals living at those altitudes who do not occupy themselves with sports. This increase in the erythrocyte count is considered to be an adaptive reaction of the organism of athletes to conditions present at moderate altitude. An increase in hemoglobin was found to continue for a certain period of time after descent. This gives an athlete a chance to perform work requiring considerable physical exertion. Altitude may be utilized, therefore, in conditioning athletes. No specific peculiarity of any kind was observed in the leukocyte count of athletes who lived for a long period of time in areas of moderate altitude.

28. Means of Improving Human Tolerance of G-forces Discussed

"G-Forces and Ways of Increasing the Tolerance of an
Organism," by Candidate of Biological Sciences V.
Stepantsov and Candidate of Medical Sciences G. Khleb-
nikov; Moscow, Aviatsiya i Kosmonavtika, No 1, Jan 63,
pp 44-48

The authors discuss in this article those problems in space medicine which include tolerance of increased velocity and G-forces. They conclude that conditioning could improve human tolerance of a force which causes a change in velocity. Physical exercises which would contribute to the development of compensatory vasomotor reactions and to raising the functional condition of those organs and systems which are identified with the organism's tolerance of G-forces should be performed.

29. Projects To Study Embryos Growing Under Weightlessness Discussed

"Space Embryology," by A. Neyfakh, Doctor of Biological Sciences; Moscow, Nauka i Zhizn', No 1, Jan 63, pp 65-67

The development of embryos under G-forces, vibrations (On take-off and landing), radiation, and weightlessness during space flight is discussed.

Embryos can be used as especially sensitive dosimeters in model experiments on forces such as vibrations, G-forces, and weightlessness because embryos are extremely sensitive by nature to any injuries; and any injury affecting an embryo during its early development, when it consists of just a few cells, is intensified as the cells multiply.

According to the author, the successful flights of Soviet astronauts have shown that man can endure prolonged space flights under weightlessness, and model experiments on G-forces and radiation effects on organisms already have been conducted, but weightlessness has not been adequately tested, especially on developing embryos.

The major space embryology problems discussed are the following; Will fertilized chicken eggs when subjected to weightlessness have difficulty in respiring and finally perish due to lack of oxygen and carbon dioxide exchange through the shell? What happens to fertilized frog eggs developing under weightlessness; will there be adequate distinction between the dark, white, and grey areas; will the animal and vegetable poles be shifted; and will such ova retain their bilateral symmetry when they develop? What is the effect of weightlessness on animals with radial symmetry? Another topic discussed briefly is the development of a closed biological cycle in a space ship with at least three known links: man, plant, and a rapidly multiplying animal.

To solve some of these problems, model experiments were conducted on parasitic worms-nematodes, which were selected because they can endure wide temperature ranges. Fertilized nematode eggs were carried frozen on Vostok-III and Vostok-IV, then thawed for a definite period, and then refrozen and brought to the laboratory for testing. Results of these experiments showed that acceleration and vibration, encountered by these embryos at different stages of development exerted no noticeable effects on their development. The author cautions that in these experiments only the effect of flight on eggs already fertilized was studied, but not the effect of weightlessness on the plane of symmetry. This latter problem is much more complex and is designed for study in future flights, according to the author. Furthermore, this program includes other studies designed for future flights and connected with space embryology intended to make space flights safe, and solve some problems in theoretical biology.

30. Sputnik Sickness

"The Present Situation of the Problem of Vibration Effect on (Humans," by G. L. Komendantov and V.E. and I. Kopanev, Central Institute for the Advanced Training of Physicians; Moscow, Gigiyena Trude i Professional'nyye Zabollezaniya, No 2, Feb 63, pp 42-46

The authors review data from literature and discuss their research on the problem of vibration effects on the central nervous, cardiovascular, and respiratory system, and on the gastrointestinal tract. Various aspects of sea-sickness, car-sickness, air-sickness, and sputnik-sickness are explained; but it is evident that vibration sickness still lacks preventive and therapeutic measures based on scientific principles.

31. Czechoslovak Report on Soviet Anabiosis

"Items of Interest and News From the USSR, Will We Fly to the Stars in a Frozen State?" Bratislava, Svet Vedy, Vol 9, No 12, Dec 62, p 763

Among the methods being studied to permit human travel to distant planets is anabiosis of living organisms, a state between living and nonliving. Some interesting results have been attained already, e.g., the Central Chemical Laboratory at the Bereznykov Potassium Combine in the Urals succeeded in restoring to life algae which had lain in deep salt beds for some 20 million years. The US and the German Federal Republic are conducting experiments with the restoration of life to organisms living some 200 million years ago. These serious attempts prove that living matter can exist in a state where no metabolism or aging occur in the organism, and under favorable conditions the organism can be restored to life. Cooling of the body holds the most promise in the anabiosis approach. Scientists involved in cosmic research have concentrated their interest on the successes of hypothermia in current medical practice, considering the possibility of "freezing" cosmonauts during space flights thus stopping metabolism for a long period and then restoring them to life as their destination is approached. [Soviet] scientists have achieved notable successes along this line. An anesthetized mouse was cooled to -200 degrees Centigrade and apparently ceased living. After an extended period, the mouse was exposed to warmth and regained life without ill effect.

Burn Trauma

32. The Function of the Thyroid Gland in Burn Sickness

"Changes in the Function of the Thyroid Gland During Burn Sickness," by G. A. Trofimov, Military Medical Order of Lenin Academy imeni S. M. Kirov; Moscow, Teratevticheskiy Arkhiv, Vol 35, No 1, Jan 63, pp 84-89

Changes in thyroid gland function resulting from burn sickness are determined by the depth and area of the burn. Immediately after a burn is inflicted, the function of the thyroid gland is inhibited, and the degree and duration of inhibition are commensurate with the depth and area of the burn. The development of burn sickness is accompanied by an increase in the functional activity of the thyroid gland, and the degree of this increase is inversely proportional to burn severity. Burn exhaustion is accompanied by a decrease in thyroid gland function which is most pronounced at the end of the third month of sickness. Changes in thyroid gland function due to burn sickness are reversible.

Cardiovascular Diseases

33. Transaminase Level Determines Myocardial Infarction

"Differential Diagnosis Valuable for Determining Transaminase in Blood Serum During Myocardial Infarction," by O. I. Glasova and S. S. Izraelit, Therapeutic Clinic and Laboratory of A. V. Novosel'skaya (Candidate of Medical Sciences), Moscow Scientific Research Institute of First Aid imeni Sklifosovskiy; Moscow, Klinicheskaya Meditsina, Vol 41, No 1, Jan 63, pp 3-7

Determining enzyme activity has practical significance for the differential diagnosis of acute cardiac diseases and diseases of other internal organs. To establish a diagnosis of myocardial infarction, enzyme activity should be determined not before 5 hours after the attack and not later than on the 4th day of the attack. In cases where myocardial infarction is suspected but the analysis is negative during the first day of the sickness, the analysis should be repeated a few hours later. Highest enzyme activity due to myocardial infarction occurs on the 2d day of the sickness. Enzyme activity of ACT (glutamine-asparagine-transaminase), ALT (glutamine-alanine-transaminase), aldolase, and the coefficient of ACT/ALT should be determined in the differential diagnosis of myocardial infarction.

This method of determining enzyme activity is simple and makes it possible to establish a valuable diagnosis quickly.

Epidemiology

34. High Incidence of Smallpox in India

Alma-Ata, Kazakhstanskaya Pravda, 14 Feb 63, p 3

"A smallpox epidemic is raging in the state of Uttar Pradesh, Northern India. As officially announced in the state legislature, 1,785 persons have died of smallpox in the past 3 months. A total of about 6,000 cases of smallpox have been reported here.

"A violent epidemic of smallpox in crowded Calcutta, capital of the state of West Bengal, is also noted. Public health organs are carrying out mass inoculations against smallpox."

35. Czechoslovakia's Epidemiological Situation in November

"News;" Prague, Casopis Iekaru Ceskych, Vol 102, No 8,
22 Feb 63, p 224

During November an epidemic of abdominal typhus occurred at an apprentice school in Dolni Lipova, Jesenik Okres, Central Bohemia Kraj, where 68 cases were reported. Afflicted were students and staff members of the school, as well as personnel from plants in which students were performing their practical work. A sewer line, from which water was used for bathing and for washing of kitchen utensils had broken and become contaminated. Apparently a girl student whose father had had the disease at the end of World War II was the source, although this has not been proven.

There were also less extensive epidemics of the disease in other localities, and in almost all cases the outbreaks were traced to faulty disposal of liquid wastes. In the course of the epidemiological investigation, 14 heretofore unidentified carriers were found.

Also during November, 10 cases of brucellosis and 17 cases of ornithosis were reported. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, Prague, 1963)

36. High Incidence of Dysentery in East Germany During 1962

West Berlin, Informationbuero West, 12 Feb 63, p 5

Communicable diseases continue to represent the chief problems of East German health authorities, according to Dr Michael Gehring, deputy Minister of Public Health. Citing official figures, Dr Gehring confirmed that there were 105.33 dysentery cases per 100,000 citizens in East Germany during 1962, compared with 14 in 1958, 96 in 1959, 44 in 1960, and 63 in 1961. Diseases classified under "other salmonellosis" were also on the rise in 1962, when 46.16 per 100,000 citizens were reported to have been affected, compared with 4 in 1958, 35 in 1959, 30 in 1960, and 44 in 1961.

37. East German Institute Reviews Anti-Foot-and-Mouth Disease Measures

Berlin, Neucs Deutschland, 30 Jan 63

Based on the practical experience of decades, the Friedrich Loeffler Institute on the Island of Riems has arrived at a scientific concept concerning the most effective measures against foot-and-mouth disease adapted to the special conditions prevailing in the GDR. This concept consists of the prophylactic vaccination of the entire cattle stock to establish basic immunization against the three types of foot-and-mouth disease and, in the event of epidemics, to isolate the center of infection through strict veterinary and hygienic measures and to administer an additional vaccination to prevent the disease from spreading further.

It has been pointed out repeatedly that it is impossible to fight foot-and-mouth disease with vaccination only. Since the passage of the 1950 law concerning the combating of foot-and-mouth disease, no substantial outbreak of the disease has been noted in the GDR. The present spread of the disease shows once more that large-scale vaccination of cattle forestalls extreme economic damage. Compared with the results of the disease in former times, its present effects are far less devastating. Unfortunately, large-scale prophylactic vaccination administered to cattle cannot be applied to pigs. Despite intensified efforts, no country has as yet succeeded in solving this problem.

After many years of research the institute has found hopeful beginnings for methods from which effective measures against foot-and-mouth disease may be anticipated. Part of the necessary large-scale tests will be carried out in close cooperation with Soviet scientists.

C-O-N-F-I-D-E-N-T-I-A-L

The opinion that the institute took inadequate preparatory steps to protect GDR livestock may be refuted as follows: in 1962, more than 39,000 liters of foot-and-mouth disease vaccine were produced, compared with 20,000 liters planned. Of this quantity, about 31,000 liters, equivalent to about 6.2 million vaccine doses, were for the type C virus.

Efforts to produce more vaccine were considerably intensified when the epidemic continued to spread. Up to September 1962, a sufficient quantity of vaccine was available. The fast and unexpected shift of the disease to pigs, however, increased demands to such an extent that they could not be satisfied immediately.

The question arises as to how the disease could spread so widely. It has again been demonstrated that it is impossible to battle an epidemic with only one vaccine, especially since no fully effective anti-foot-and-mouth vaccine is available for pigs. The necessary veterinary and hygienic measures were not enforced in accordance with the rigid requirements. The institute now realizes that it did not sufficiently promote the implementation of countermeasures.

The vaccine has been overrated in some areas, and the concept that vaccination and hygiene measure go together was not always realized. It will be necessary to a still greater extent to inform state officials and all persons in rural areas about the measures required to fight animal epidemics.

The difficult problems of battling foot-and-mouth disease can be solved only if the veterinary service, the state organs, and all persons concerned cooperate closely. The institute will meet its obligation to increase the production of vaccine with even greater zeal. All staff members of the institute will intensify their efforts to develop a vaccine against foot-and-mouth disease in pigs to ensure that the danger to pigs will be averted in the future to the same extent as has been the case with cattle.

38. Residents of Gera, East Germany, Advised to Boil Drinking Water

"Tireless Helpers"; Gera, Volkswacht, 6 Feb 63, p 6

The danger of an epidemic [type not specified] in Gera is considered to have been eliminated due to the tremendous achievements of the Hygiene Inspection Center, the physicians, and all other personnel. The danger was greatly reduced at the start through the work of all public health assistants and the students at the medical school. In view of the impending thaw it will be advisable to continue to observe the health measures. All drinking water should be boiled.

Gerontology

39. The Phenomena of Old Age, Aging, and Longevity

"Man Will Live a Long Time," by D. Chebotarev Corresponding Member of the Academy of Medical Sciences USSR and Director of the Institute of Gerontology; Moscow, Pravda, 6 Jan 63, p 3

The author states in this article that scientists have made considerable progress, in the past few years, in unraveling the secrets of protein synthesis, the transmission of heredity, and other processes which take place in the human organism. He further states that if these processes could be controlled, the question of regulation of the vital activity of an organism will be largely solved.

There are two types of aging: physiological, which is natural, and premature, which is pathological. Everybody could live past 100 years of age if it were not for premature aging. Diseases of the cardiovascular system, atherosclerosis, hypertension disturbance in the activity of the nervous system, and disruption in metabolism are the main causes for premature old age. A great deal is known now about why and how diseases of the heart and of the blood vessels develop and what causes cancer. This knowledge forms the basis for the extensive preventive measures undertaken in the USSR.

In the future, a physician will have more to do than just treat and prevent diseases. His task will become mainly to help healthy people attain a high level of physical and mental perfection. Freed from many diseases and from premature aging, a human will be able to celebrate his 90th birthday in a state of high creative activity and mental contentment.

Investigations on the molecular and cellular level have been conducted at the Institute of Gerontology, Academy of Medical Sciences USSR. Some answers have been found to the questions of how individual cells and some phases of metabolism become transformed, how the neural and chemical regulation of vital processes become changed, and what dislocations take place in the activity of various systems in the course of the aging of an organism. The time when new active chemical substances will make their appearance is not far away. Stimulating vital processes, these active preparations are expected to help humans retain their vigor and continue their physical and mental activity which in themselves may help to forestall the aging process.

40. Possibilities of Increasing Life Span Discussed

"Investigation of Longevity in Belorussia," by Physician G. L. Strikovskiy; Minsk, Zdravookhraneniye Belorussii, No 11, Nov 62, pp 65-67

An expanded program to increase the life span of Soviet people is discussed in this article. An expanded program of study of why some people live long and others do not is also suggested.

There are 2,000 people 90 years of age and 600 people 100 years of age living in the Belorussian SSR. More active elderly people were found to be living in Dunilovichskiy Rayon of Vitebskaya Oblast' than can be found even in the renowned Ochemurskiy Rayon of the Abkhaz ASSR. The largest number of elderly people were found to be living in the woodland area (Poles'ye) of Belorussia. On the basis of examination of a few people 90 years of age and over it was possible to reach tentatively the following conclusion: heredity plays an important part in the majority of cases; a well-balanced nervous system and the fact that agriculture has been the principal occupation of many people who reached this age have contributed to longevity.

The author suggests in this article that homes for the aged be made scientific centers for continued investigation of longevity. Particular attention in all investigations of old age and the aging process must be given to the study of functions of the higher nervous system, the role of endocrine glands, changes in basal metabolism, the effect of oxygen, the role of microclimate, the effect of mental and physical stress, and the influence of heredity. The search for preparations active in the prevention and treatment of premature aging must be continued. This work must be conducted in cooperation with the Institute of Gerontology and Experimental Pathology, Academy of Medical Sciences USSR, with the Gerontological Center, Academy of Sciences Belorussian SSR, and also with the World Health Organization of the UN.

Proposals must be made to organize outpatient medical service for all people over 60 years of age. Elderly people must be assigned to occupations the demands of which correspond to their physical and mental capacity. Elderly people should be removed from areas where they would be exposed to noise, radiation, and other stresses. Increased mechanization and automation of both mental and physical work are expected to help prolong the life of Soviet people and will create an environment in which old people can remain active.

Hematology

41. Phagocytic Activity of Fetal Bone Marrow

"The Phagocytic Capacity of the Bone Marrow of Human Fetuses," by N. A. Mefedova, Central Order of Lenin Institute of Hematology and Blood Transfusion, Ministry of Health USSR; Moscow, Problemy Gematologii i Perelivaniya Krovi, Vol 7, No 12, pp 47-50

A total of 65 tests were conducted on bone marrow prepared within 20 hours after the death of human fetuses 20-33 weeks old.

Results showed that the phagocytic activity and the phagocytic index of the mature bone marrow cells of the human fetus are 70-75% and 10-20% respectively. These indexes are very similar to bone marrow indexes of adult donors (75-85% and 15-22% respectively).

The phagocytic capacity of the different bone marrow cells of the fetus was not uniform and could be graded decreasingly as follows: the segmented, stabs, monocytes, young leukocytes, myelocytes, promyelocytes, and reticular cells.

Phagocytosis drops sharply when fetal bone marrow is kept in the preservative TsOLIPK No 1: the phagocytic activity drops threefold, and the phagocytic index drops fourfold within 5 days of storage, and within 8 days phagocytic activity is completely lost.

Immunology

42. Tularemia Vaccine Development

"Apropos of the Development of a Live Anti-tularemia Vaccine," by N. G. Olsuf'yev, M. M. Faybich, and V. P. Motornaya, Izv. Irkutskogo N.-I. Protivochnn. Inpta Sibiri i Dal'n. Vost. (News of the Irkutsk Scientific Research Antiplague Institute Of Siberia and the Far East), No 24, 1962, pp 374-378) (From Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B399)

[No abstract given].

43. New Influenza Vaccine Tested in East Germany

Berlin, Der Morgen, 21 Feb 63

The Berlin Institute for Serum and Vaccine Testing is starting a test series with Soviet influenza vaccines and also with a vaccine to be developed domestically. Attenuated virus cultures form the basis for this vaccine. The tests will be concluded in the near future.

44. Smallpox Vaccinations in East Germany

"Vaccination for 20-Year Olds"; Frankfurt/Oder, Neuer Tag, 18 Feb 63, p 6

It is again pointed out that the 1943, 1944, and 1945 age groups will receive smallpox vaccinations in Frankfurt/ Oder during 18-21 February and on 23 February. It is emphasized that this vaccination is compulsory in accordance with the Legal Gazette, Part II, dated 14 April 1962.

The danger of large-scale outbreaks of smallpox through its introduction from other parts of the world has not yet been eliminated. We know that many millions became victims of this disease in former times and we must, therefore, maintain and expand our measures to protect the population, particularly since it was discovered that the two vaccinations administered in the past at age 2 and again at age 12 did not always provide complete protection against this dreaded disease. -- Dr Robert Kludt, Frankfurt/Oder Kreis physician

Medical Equipment

45. Role of Electronics in Medicine Discussed

"On the Road to Electronics," by Doctor of Medical Sciences F. Portnov and Candidate of Technical Sciences D. Dobryakov; Moscow, Meditinskaya Gazeta, 7 Dec 62, p 3

Medical electronics has developed greatly in the Soviet Union in recent years. The activity of the medical electronics section of the Scientific-Technical Society of Radiotechnology and Electrocommunication imeni A. S. Popov has played a large role in this development.

Electromyography, electroretinography, and electrogastrography and now used for collecting information about physiological processes, in addition to the rather widely-used methods of electrocardiography and electroencephalography.

An original solution to the problems of studying the dynamics of the biopotentials of the brain was suggested by V. M. Anan'yev and M. N. Livanov in the electroencephaloscope they created. This instrument makes it possible to observe the "mosaic" of electrical activity in 50 and 100 sections of the brain. This mosaic is represented on the screen of the electron beam receiver in the form of luminous points, whose intensity constantly changes depending on the fluctuations of the potential. At present Anan'yev and Livanov are working on methods of processing the data obtained by the electroencephaloscope and electronic computers.

Radiotelemetry, the transmission and recording of information at a distance, was used to relay information about the physiological condition of the cosmonauts from the cosmic ships to earth. Radiotelemetry systems are also being used in studying the physiology of labor and sports. The work of the Sverdlovsk biotelemetry group under the leadership of Candidate of Medical Sciences V. V. Rozenblat is widely known. This group has created several portable transmitters which make it possible to record the electrocardiogram of a person while he is engaged in sports or labor activity.

The industrial model on the tele-electrocardiograph was developed by the All-Union Scientific Research Institute of Medical Instruments and Equipment.

A "radiocapsule" for investigation of the human gastrointestinal tract has been developed by Academician of the Academy of Sciences Ukrainian SSR Ye. B. Babitskiy and engineer A. M. Sorin.

46. New Instrument Can Determine Speed of Thought Processes

"A Thought Recorder"; Moscow, Meditsinskaya Gazeta,
5 Jan 62, p 3

A new instrument is described which is capable of determining the speed of the thought process -- a radioreflexometer RRM-59. An important quality of this instrument is the great precision of its measurements, from 0.0001 to 0.0005 seconds. It works silently; its construction is simple and compact.

The RRM-59 is used successfully in studying the higher nervous activity of man and animals, and also in working out various questions of physiology and experimental psychology. It is also capable of calculating the speed of various conditioned and unconditioned reflexes.

47. Radioelectrocardiograph Used To Measure Heart's Activity During Physical Work

Workers at the automobile factory imeni Likhayev are testing the radioelectrocardiograph -- a new device which makes it possible to register the heart's activity at a distance during physical work.

The instrument makes it possible to ascertain what sort of stress affects the worker's heart. It will help doctors expose many cardiovascular diseases.

Physicians from the Central Scientific Research Institute for the Expertise of Work Capacity are conducting the investigation.

48. Scintillation Gamma for Dosages Up to 5 Microrentgens per Second

"A Scintillation Gamma-Dosimeter," by Ye. A. Kramer-Areyev, V. K. Sakharov; Moscow, (Gosatomizdat), Pribory i Metody Analiza Izlucheniya, No 3, 1962, pp 89-96 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2,32.817)

This design-stage instrument has two main sections, the remote pickup and the measurement panel with the PS-10,000 instrument. The pickup consists of photomultiplier and compound scintillator. The main scintillator is plastic (p-terphenyl in polystyrene), 40 millimeters in diameter and 6 millimeters high. The instrument was tested for intensity over a wide range of energies. The dosimeter can be used only for dosages not exceeding 5 microrentgens per second. The sensitivity is $1.9 \cdot 10^{10}$ pulses per roentgen. The instrument can further be used as a roentgenometer (measurement range 0-8 microcures per second).

49. A Device for Charging Dosimeters

"A Device for Charging Type DK-0.2 Dosimeters by Exploiting the Electrification Phenomenon," by V. S. Gostishchev, and E. N. Sharashkin; Sbornik Rabot NIIM. Sovnarkhoz Rostovskogo Ekonomicheskogo Administrativnogo Rayona (Collection of Works of the Scientific-Research Institute of the Technology of Machine Building, Council of the National Economy, Rostov Economic Administration District, No 2, 1961, pp 91-96 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32,821)

"The Scientific-Research Institute of the Technology of Machine Building, in Rostov, designed a charging device which utilizes the phenomenon of electrification to charge DK-0.2 dosimeters. The device consists of a friction disk of organic glass, to which a rubber band is attached; a reflecting foil to illuminate by reflected light the scale of the dosimeter and the filament, and a jack with contact rod. When the friction disk is rotated with the rubber band pressed firmly against it, the disk is charged with positive electricity which is removed by copper hairs running through the rubber band. The charge is transferred to the contact rod and through it to the filament of the dosimeter. According to the charge, the potential of the filament rises to the required value."

50. Single-Crystal Scintillation Gamma Spectrometer for Low Intensities

"An Apparatus for Measuring Complex Gamma Spectra of Low Intensity," by Ye. L. Stolyarova, S. G. Chukhin, and A. V. Larichev; Moscoe (Gosatomizdat), Pribory i Metody Analiza Izlucheniya (Instruments and Methods of Analyzing Radiations -- a collection of articles), No 3, 1962, pp 181-185 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.822)

"A single-crystal scintillation gamma-spectrometer was devised for an experimental investigation of the passage of gamma rays through substances. The use of a large sodium iodide crystal guarantees a high efficiency of the spectrometer recording (80 percent for gamma rays with energies of one Mev and not less than 50 percent for energies of 10 Mev). The daily instability of the energy scale of the spectrometer did not exceed 1.5 - 2 percent. The energy scale of the spectrometer is sufficiently stable even with respect to charges. Such a spectrometer can be used to measure complex gamma spectra within wide energy and intensity ranges, to measure the spectra of scattered gamma rays, and to conduct qualitative and quantitative analyses of isotopes on the basis of gamma radiation."

51. Proportional Counter for Mixed Gamma-Neutron Radiation

"A Dosimeter for Mixed Gamma-Neutron Radiation," by V. I. Ivanov; Moscow, (Gosatomizdat), Sbornik Rabot Po Nekotorym Voprosam Dozimetrii i Radiometrii Ioniziruyushchikh Izlucheniya (Collection of Works on Certain Problems of Dosimetry and Radiometry of Ionizing Radiations), No 2, 1961, pp 121-124 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.16)

"The Moscow Engineering Physics Institute has suggested using a Proportional counter as a dosimeter pickup for measuring the total dosage of a mixed beta-neutron radiation, taking into account the relative biological effectiveness. A block diagram of the installation is given. To test the suitability of the suggested measurement methods, a proportional counter filled with BF₃ was used, and an ordinary SNM-5 counter was coated with paraffin in order to slow down the neutrons of a polonium-berillium source.

52. Photomicrographic Densitometer for X-Ray Films

"Instrument for Photomicrographic Measurement of X-Ray Films," by I. L. Rudakov; Zapiski Voronezhskogo Sel'skokhozyaystvennogo Instituta (Reports of the Voronezh Agricultural Institute), Vol 17, No 2, 1962, pp 267-269 (from Referativnyy Zhurnal-Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.776)

"The Chair of Domestic Animal Pathology and Therapy of the Voronezh Agricultural Institute has devised a microdensitometer for measuring very low intensity light fluxes. The operation of the instrument is based on the charging of a capacitor by a photocurrent with subsequent discharge through a type MN-3 neon lamp, which is ignited only when a particular voltage is applied to its electrodes. The light from the neon source (2.5-volt, 0.28 amp lamp) passes through a diaphragm with a one-millimeter aperture, penetrates through the x-ray film and strikes the photocell, dislodging from its cathode enough electrons to charge a 500-1,000 microfarad capacitor with the ignition potential of the neon lamp. When the lamp ignites, the capacitor is discharged into the glowing gas. Such a periodicity of operation continues as long as the light flux is sustained. The results of the measurement are determined by the number of pulses in a given period of time. As far as accuracy is concerned, the described microdensitometer is on a par with the MF-2 microdensitometer and, with very few modifications, can also be used for photometric analysis of electrophoresis diagrams."

53. Beta-Gamma Contamination Meters

"Instruments for Checking the Contamination of Water by Beta--and Gamma-Active Substances," by V. A. Chizhov, Yu. A. Yuzvuk, A. A. Pozdnyakov, Ye. K. Sakseyev, A. V. Kalistratova, V. K. Sysoyev and A. V. D'yakov; Moscow, Sbornik Rabot po Nekotorym Voprosam Dozimetrii i Radiometrii Ioniziruyushchikh Izluchenyi (Collection of Works on Certain Problems of Dosimetry and Radiometry of Ionizing Radiations), No 2, 1961, pp 187-191 (from Referativnyy Zhurnal-Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.807)

"Type IVS-1, IVP-2, and KRV-1 instruments have been designed for checking beta-gamma contamination. The stationary type IVS-1 is used for direct measurement of the beta-gamma contamination of industrial waste waters in the concentration range of $5 \cdot 10^{-9}$ to $5 \cdot 10^{-5}$ curie/liter for $Sr^{90} + I^{90}$ against a gamma-background of up to 30 microroentgen/second. The IVP-2 type is a portable radiometer with battery (STsS-5) feed and is used to measure the beta-contamination of water in concentrations of $5 \cdot 10^{-9}$ to $5 \cdot 10^{-6}$ curie/liter for $Sr^{90} + I^{90}$ under field conditions. Measurements can be taken against a gamma-background of up to two microroentgens per second. The KRV-1 instrument is a modification of the IVP-2 with AC mains feed and STsS-5 battery. The scales of these instruments are calibrated in pulses per minute."

54. Doorway Radiometric Signalling Device for Beta-Contamination of Clothing

"A Radiometric Signalling Device for Checking Personal Clothing," by G. P. Sivenkov; Moscow (Gosatomizdat), Sbornik Rabot Po Nekotorym Voprosam Dozimetrii i Radiometrii Ioniziruyushchikh Izlucheniy (Collection of Works on Certain Problems of Dosimetry and Radiometry of Ionizing Radiations), No 2, 1961, pp 247-248 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.815)

"The described device is used to register beta-contamination on the order of 10^4 beta particles per 150 square centimeters of area within a period of one or two seconds. The pickups are eight STS-6 counters, four of which are mounted on the doorcase (two on each side) and the remaining four on a trough-like base flush with the floor and covered with a polyethylene sheet. The registering part of the device consists of a pulse-averaging section, storage cell, DC current amplifier, signalling circuit and rectifiers, one of which is applied to the counters and the other to the circuit. The signalling device rings a bell and flashes a red light on the viewing panel."

55. Measuring Doses of Fast and Thermal Neutrons

"The Measurement of Doses of Fast Neutrons," by O. I. Leypunskiy; Moscow (Gosatomizdat), Pribory i Metody Analiza Izlucheniy (Instruments and Methods of Analyzing Radiations -- A Collection of Articles), 1962, pp 97-104 (from Referativnyy Zhurnal - Metrologiya i Izmeritel'naya Tekhnika, No 2, Feb 63, 2.32.812)

"A brief survey-type report is given on the measurement of doses of fast neutrons (energies above 0.5 Mev) and doses from thermal neutrons. The measurement of doses of neutrons of intermediate energies (0.4 ev to 1 Mev) necessitates knowing the spectrum of these neutrons under practical conditions and determining to what extent it differs from the Fermi spectrum."

56. New Air Purifier for Operating Rooms

"A Beacon Kills Microorganisms"; Moscow, Moskovskaya Pravda, 1 Feb 63, p 3

The All-Union Scientific Research Institute of Medical Instruments and Equipment has developed an ultraviolet lamp similar to a miniature beacon, which can completely disinfect the air in an operating room in 15 minutes.

The lamp has been assigned to the Sverdlovsk Plant of Electromedical Equipment for serial production.

Nuclear Medicine

57. Phagocytosis Activated During Radiation Sickness

"The Effect of Certain Nicotinic Acid Preparations on Phagocytosis in Irradiated Animals," by Ye. M. Chukichev, Chair of Pharmacology, Perm Medical Institute; Moscow, Farmakologiya i Toksikologiya, Vol 26, No 1, Jan/Feb 63, pp 80-84

Single general X-irradiation by 800 μ produces acute radiation sickness in cats, with the death, within 20 days, of 30 percent of the animals. A progressive decrease in the number of leukocytes in the peripheral blood, a decrease in the activity and intensity of phagocytosis, and a weakened phagocytic capacity of the phagocytes are observed in the irradiated animals. The number of undigested bacteria rises (determined by the Berman and Slavskaya method).

The systematic administration of 5 mg/kg of sodium nicotinate or as 10 mg/kg of 4-antipyrilamide of nicotinic acid to the irradiated animals activates in them all phases of phagocytic reaction and, to a certain extent, normalizes the number of leukocytes in the peripheral blood. These tested preparations exert no noticeable effect on animal survival or on microscopic changes of internal organs, but they do exert a favorable effect on the general condition of the animals, especially in preventing progressive emaciation, contribute to the cessation of vomiting and diarrhea, help to reduce adynamia, and improve the appetite of the animals.

58. Cystamine Most Radio-Protective 30-60 Minutes Before Irradiation

"The Effect of Cystamine Hydrochloride on the Development and Course of Radiation Sickness in Patients Subjected to X-Irradiation," by V. S. Vakhtel' and L. F. Sinenko, Chair of Roentgenology and Radiology of the Military Medical Order of Lenin Academy imeni S. M. Kirov; Moscow, Meditsinskaya Radiologiya, Vol 8, No 2, Feb 63, pp 13-18

Observations on patients who had been subjected to X rays and gamma-irradiation by large doses and who had received cystamine hydrochloride showed that the preparation possesses definite protective properties against ionizing radiation.

C-O-N-F-I-D-E-N-T-I-A-L

The administration of cystamine when the neck and chest areas were irradiated produced a mild form of radiation sickness in 25 of 130 patients (19.2%); when the abdominal area was irradiated, it produced a milder form of irradiation sickness in 36 of 72 patients (50%); and when the head was irradiated, no radiation sickness developed.

Cystamine is ineffective if administered after radiation sickness has developed (during severe leukopenia). Patients made no complaints when single (up to 0.3g) and total (up to 42g) large doses of the preparation were used. It is possible to use cystamine with preparations that stimulate leukopoiesis when the number of leukocytes is significantly decreased during the period of irradiation and when prolonged treatment is necessary.

Cystamine hydrochloride can be recommended for extensive use in roentgenological and radiotherapeutic clinics for the prophylaxis of radiation sickness following radiation by large doses of X- or gamma-rays.

59. Combined X-Ray and Antibiotic Treatment of Leukemia

"An Experimental Study of the Combined Action of Antitumorous Antibiotics and X-Irradiation During Leukemia," by I. I. Zaretskiy, A. Ya. Krashilina, L. N. Borisova, and I. B. Gurevich, Laboratory of Experimental Therapy of Blood System Diseases and Roentgenological Department, Central Order of Lenin Institute of Hematology and Blood Transfusion, Ministry of Health USSR; Moscow, Meditsinsaya Radiologiya, Vol 8, No 2, Feb 63, pp 51-57

Intensified antileukemic activity of the antitumor antibiotics Quarantine and the sodium salt of antibiotic 6613 when combined with x-irradiation was established in experiments on animals with transferable leukemia. On the contrary, there was no intensification of the therapeutic action on the leukemic process when x-irradiation was combined with antibiotic 16,749, as a result of which the general toxic effect increased.

Certain similarities in the action of antibiotic 16,749 and X rays on the proliferating bone marrow cells and certain differences in the action of aurantine and the sodium salt of antibiotic 6613 are discussed

60. Carbon Monoxide Alleviates Acute Radiation Syndrome

"The Effect of Carbon Monoxide on the Course and Outcome of Acute Radiation Sickness," by V. V. Kustov; Moscow, Radio-biologiya, Bol 3, No 1, Jan/Feb 63, pp 53-58

Carbon monoxide when used in a concentration of 11 mg per liter at different periods after acute radiation sickness exerts a positive effect on the course of acute radiation sickness in rats. No effect on the course of acute radiation sickness in rats was evident when a mixture of helium-oxygen was used to cause the same degree of hypoxia and practically an identical degree of inhibition of respiration as that produced by an 11 mg/liter concentration of carbon monoxide. Carbon monoxide at this concentration normalizes tissue respiration inhibited by X rays in liver slices. According to the author, the positive effect of carbon monoxide on the course of acute radiation sickness in rats is due to its specific effect on tissue metabolism.

61. DNA, RNA Effective in Radiation Treatment

"The Effectiveness of High-Polymer DNA in Treating Acute Radiation Sickness," by R. Ye. Libinon, V. V. Konstantinova, K. N. Muksinova, T. G. Popopa, and S. A. Rogacheva; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 111-115

The therapeutic effectiveness of high-polymer, isologous, natural DNA preparations was demonstrated in experiments on rats. In a number of experiments, the survival rate from these lethal doses was 40-58% as compared to 2-13% in the controls. Tests also showed that factors which caused the denaturation of DNA preparations decreased its therapeutic effect. The authors discuss various possible mechanisms of DNA action and postulate that most probably the therapeutic action is due to the phagocytosis of DNA particles and of deoxyribonucleo-protein by reticular cells of the hemopoietic tissues, with the subsequent acceleration of proliferation and differentiation of reticular cells.

62. Hemopoiesis in Irradiated Bone Marrow Stimulated by UV Irradiation

"The Effect of Ultraviolet and Ionizing Radiation on Bone Marrow Hemopoiesis in Guinea Pigs," by T. A. Sviderskaya and I. N. Filipson, Scientific-Research Institute of Radiation Hygiene, Leningrad; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 45-52

Bone marrow studies were conducted on guinea pigs 8-10 months after gamma-irradiation and 10-40 days after X-ray irradiation. It was shown that bone marrow hemopoiesis after gamma-irradiation was more intense in those animals that were previously subjected to ultraviolet irradiation than in the controls (subjected only to gamma-irradiation). This difference in hemopoiesis was evidenced by a higher content of cells of the erythroid series in the myelograms and by the larger number of myelokaryocytes in the bone marrow punctates of the experimental animals. The difference in bone marrow hemopoiesis between the group of animals that were subjected to ultraviolet irradiation and then to gamma-irradiation and the group of animals that were subjected only to gamma-irradiation was even more distinct at periods closer to radiation sickness (40 days after irradiation). Bone marrow studies of guinea pigs subjected to a course of ultraviolet irradiation showed a significant increase of erythroid cells and of reticulocytes in bone marrow punctates as compared with the original figures.

These data confirm the stimulating effect of ultraviolet rays on bone marrow hemopoiesis.

63. Bicillin- Vitamin B₁₂ Treatment of Radiation Sickness

"Bicillin-3 in the Treatment of Experimental Acute Radiation Sickness," by V. A. Baraboy and Ye. Ye. Chebotarev, Department of Biophysics, Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences Ukrainian SSR; Kiev, Vrachebnoye Delo, No 2, Feb 63, pp 97-100

Repeated intramuscular use of bicillin-3 in large doses (50,000 units) is a most effective method of treating acute radiation sickness in rats subjected to 750 r. Combining bicillin with Vitamin B₁₂ increases the survival of the animals to 85 percent, as compared with 10 percent survival in the control group. Bicillin treatment of rats suffering from acute radiation sickness leads to an earlier (on the 8th- 12th day) restoration of hematologic indexes. Bicillin administration in the beginning arrests the infection of organs of the irradiated animals for 3-4 days, and it delays and inhibits the spreading of microorganisms. Bicillin injections increase the number of leukocytes in the blood of healthy rats.

64. Vitamin B₁₂ Use During Radiation Sickness

"The Effect of Vitamin B₁₂ on the Nucleic Acid Content of the Hemopoietic Organs of Irradiated Animals," by Z. I. Sheremet and L. I. Kazanova, Radiobiological and Cytological Laboratory, Central Order of Lenin Institute of Hematology and Blood Transfusion; Moscow, Meditsinskaya Radiologiya, Vol 8, No 1, Jan 63, pp 46-53

The effects of general x-irradiation (300-600 r) and vitamin B₁₂ (10 micrograms every other day) on the amount of nucleic acids in the bone marrow and in the spleen of guinea pigs were studied.

The authors' data on the decrease in the amount of nucleic acids under the effect of irradiation as shown by the biochemical method agree with data from cytochemical studies and with data on morphological changes in the bone marrow picture. Since the administration of vitamin B₁₂ to irradiated guinea pigs during the first half of radiation sickness was followed by a still sharper fall in the DNA and RNA content of the bone marrow and spleen of most experimental animals, the fall of the nucleic acid content in the hemopoietic organs of irradiated animals is not related to a vitamin B₁₂ deficiency.

On the basis of these results, the authors conclude that the use of vitamin B₁₂ is not advisable during the initial phase of radiation sickness, but is beneficial during the period of restoration of hemopoietic functions.

65. Optimum Amounts of Bone Marrow Transplants in Superlethal Radiation Doses

"The Use of Bone Marrow Suspensions During Superlethal Radiation Injuries," by K. N. Muksinova; Moscow, Meditskaya Radiologiya Vol 8, No 2, Feb 63, pp 25-28

Tests on 500 rats of the Vistar line irradiated by 1,000, 1,200, and 1,400 r and treated by 5×10^7 , 5×10^8 , and 1×10^9 bone marrow cells, intravenously, in 2-2.5 ml amounts, 24 hours after irradiation, showed the following optimum bone marrow amounts. The optimum therapeutic dose for rats irradiated by 1,000 r was 5×10^7 cells, which resulted in 87.9% survival, over a 30-day period for rats irradiated by 1,200 r and treated by 5×10^7 cells, survival was 10%, but increasing the number of bone marrow cells to 5×10^8 resulted in 32.5% survival over a 30-day period; when the dose was increased to 5×10^9 cells, the results were not surpassed; for rats irradiated by 1,400 r and treated by 5×10^9 cells this treatment was ineffective, but when biomyacin was added to their treatment, their survival rose to 31.8% over a 30-day survival period.

C-O-N-F-I-D-E-N-T-I-A-L

The author suggests that the ineffectiveness of bone marrow treatment in such cases of superlethal injury is due to the lag in the bone marrow effect after its injection, during which time the initial radiation injuries are most injurious especially to the gastrointestinal tract which is hardly affected or none at all by the bone marrow administration. Therefore, it is evident that bone marrow treatment should be as early as possible after radiation injuries and in sufficient amounts.

66. Tissue Sorption During Radiation Sickness

"Changes in the Sorption Properties of Tissues During Acute Radiation Sickness," by Ye. G. Dolgov, Chair of Roentgenology and Medical Radiology of the Semipalatinsk Medical Institute; Moscow, Arkhiv Patologii, Vol 25, No 3, Mar 63, pp 62-65

The sorption capacity of the liver, kidney, small intestine, spleen, lungs, and brain is increased as a result of a single general irradiation of white mice by lethal doses of gamma-rays (800 r).

The sorption function of tissue elements rises shortly (6 hours), after irradiation action and by the third day attains its maximum. These shifts are most marked in the small intestine and spleen. Disturbances in sorption properties are similar to changes which occur in tissues after the effect of gamma-rays on an organism.

67. Radiation-Induced Altered Antigenic Spectrum

"Immunological Analysis of Liver Proteins During Radiation Sickness," by O. Ya. Tereshchenko, Ye. M. Belyayeva, and L. S. Mikhaylova; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, p 93-98

The antigenic spectrum of the soluble proteins of rat liver is altered as a result of radiation by 650 r. These changes are both quantitative and qualitative.

Proteins, which show the most significant changes, are characterized according to their mobility in agar gel in the Ouchterlony reaction.

68. Deafness Caused by Radium Irradiation

"The Effect of Radium Emission on the Organ of Hearing (Experimental Research)," by S. A. Zlotnikov, Candidate of Medical Sciences, Leningrad Scientific-Research Institute on Diseases of Ear, Nose, Throat, and Speech; Moscow, Vestnik Otorinolaringologii, No 6, Nov/Dec 62, pp 57-63

Four series of experiments were conducted on 24 rabbits (five controls), 4-6 weeks old. Radium in doses of 11.7-25 mc was placed in the external ear, and the animals were treated twice daily with 25,000 units of penicillin per one ml of an 0.5 percent novocain solution to prevent infection. Microscopic studies showed that the fission action of radium (11.7-25 mc doses) penetrating the bulla tympanica for several days produced inflammation of the mucous membrane and sometimes of the bony wall of the bulla, caused hemorrhages and degenerative changes in the cochlea, and influenced degeneration of the organ of Corti, of the cells of the spiral ganglia, and of the nucleus of the auditory nerve.

Regardless of the intensity of the morphological changes in the cochlea, in the spiral ganglia, or in the nucleus of the auditory nerve, deafness occurred in all the animals in the ear that was subjected to radium irradiation.

69. Ascorbic Acid Level During Radiation Sickness

"The Effect of General X-Irradiation on the Ascorbic Acid Content in Some Organs and the Blood of White Rats and Guinea Pigs," by S. T. Ryskulova, Kazakh Medical Institute, Alma-Ata; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 24-28

Parallel experiments were conducted on the radiation (550-1,000 r) effects on the ascorbic acid content in white rats which synthesize and in guinea pigs which do not synthesize this acid.

Acute radiation sickness induces changes in the ascorbic acid content in a number of organs and blood plasma of animals which synthesize (white rats) and which do not synthesize (guinea pigs) the acid. Changes arising in the ascorbic acid content in the majority of the organs and in the blood plasma do not conform to expectations for these animal species. Ascorbic acid level in the brain, liver, adrenals, and blood plasma of rats, after certain significant shifts, becomes normal. The ascorbic acid concentrations of the brain, spleen, adrenals, and blood plasma of guinea pigs which have ingested maximum and minimum amounts of the acid decrease significantly by the seventh day of irradiation. The ascorbic acid concentration of the liver of both groups of animals remains unchanged. The saturation of guinea pigs by ascorbic acid exerted no favorable effect on their survival after exposure to general x-irradiation by 700 r.

70. Radiation-Induced Transmissible Abnormalities

"Abnormal Development and Malformations of the Central Nervous System in the Progeny of Gamma-Irradiated Animals," by A. I. Osipovskiy, Yu. I. Afanas'yev, A. I. Pauper, and Yu. S. Sukhanov, First Moscow Order of Lenin Medical Institute; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 88-92

A single general gamma irradiation of guinea pigs by 225 and 450 r induces changes in the central nervous system which are accompanied by eye injury in a number of generations. Abnormalities develop also in the teeth, the skeleton, the soft tissues, and etc.

These data show that mutation in the central nervous system is the cause for the most frequent and the most pronounced abnormal development (hydrocephaly, degeneration in the cells of the cerebral cortex, and eye injury). Evidently, these abnormal developments are essentially linked to radiation action because simultaneous tests on a large number of animals showed no abnormalities.

71. Charts for Isodoses From Gammatron-2

"Dosimetric Characteristics of Gammatron-2," by A. N. Krongauz, T. G. Pavlova, and A. Z. Frolova, State Scientific-Research Roentgeno-Radiological Institute, Ministry of Health RSFSR; Moscow, Meditsinskaya Radiologiya, Vol 8, No 1, Jan 63, pp 12-17

Dosimetric characteristics of the gammatron-2 during operation under static conditions are discussed. The air dose and the distribution of doses along the central beam and along its sides are determined. Charts based on data from these measurements are presented.

72. Surgery During Radiation Sickness

"The Course of the Wound Process in the Middle Ear of Animals Subjected to X-Irradiation," by B. M. Tsetsarskiy, Chair of Ear, Nose, and Throat Diseases, Stavropol' Medical Institute; Moscow, Vestnik Otorinolaringologii, No 6, Nov/Dec 62, pp 63-69

Experiments on 40 rabbits subjected to a single dose of x-irradiation by 250, 400, or 600 r followed by surgery on the middle ear at different periods of radiation sickness showed that the healing process was not significantly delayed in animals subjected to 250 r and a 7- to 10-day delay in those subjected to 600 r.

The best time for surgery on the middle ear of rabbits subjected to radiation sickness proved to be at the end of the sickness, when the deleterious action of radiation sickness has significantly diminished.

This is the best time for the regeneration process.

Oncology

73. Tumor Inhibition by Normal Human Serum

"The Effect of Normal Human Blood Serum on the Metabolism of Ehrlich's Ascitic Carcinoma Cells," by V. I. Agol and V. G. Zaslivskiy, Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences USSR; Moscow, Biokhimiya, Vol 27, No 4, Jul/Aug 62, pp 583-587

Normal human serum inhibits glycolysis and endogenous respiration in the cells of Ehrlich's ascitic carcinoma. Glycolysis in the cells which have been treated with normal human serum can be restored by the addition of ATP and DPN. Normal human serum sharply activates the oxidation of succinate, but this activating effect is partially diminished in the presence of DPN. Under the effect of normal human serum, the oxidation of alpha-ketoglutarate may be inhibited or stimulated, depending on conditions. All tests in this experiment show that the cell-normal-human-serum system does not significantly differ from the cell-antiserum system.

74. Aurantine by Mouth for Treatment of Cancer

"The Efficacy of the Peroral Administration of Aurantine in Treating Ehrlich's Carcinoma," by N. P. Gracheva, S. S. Akopyants, and A. M. Kharitonova, Department of Infectious Pathology and Experimental Therapy of Infections, Institute of Epidemiology and Microbiology imeni N. S. Gamaleya, Academy of Medical Sciences USSR, and Department of Chemotherapy, Oncology Hospital No 62; Moscow, Antibiotiki, Vol 8, No 2, Feb 63, pp 154-157

Results of inoculating 260 mice with Ehrlich's carcinoma (5 million cells) and then treating these animals 5 or 8 days later by Aurantine (5, 10, and 20 gamma per mouse, by mouth, three times per week for 6 weeks) proved that the antiblastic antibiotic was effective in prolonging the life span of the experimental animals, in decreasing the size of the tumor, and in maintaining original body weight. The size of the tumor in the control animals was three times as large as in the animals treated by the 5-gamma dose, five times as large as in the animals treated by the 10-gamma dose, and 14 times as large as in the animals treated by the 20-gamma dose of aurantine.

These results show that after aurantine has been tested on other experimental models, it will be of interest for clinical use.

75. Histones Depress Tumor Growth

"Growth Inhibition of Transplantable Tumor by Means of Un-fractionated Histone Preparations of Normal Tissues of Mammals," by V. M. Bresler and V. I. Vorob'yev, Laboratory of the Histology of Malignant Growth and Laboratory of Cell Physiology, Institute of Cytology, Academy of Sciences USSR; Moscow, Tsitologiya, Vol 5, No 1, Jan/Feb 63, pp 69-72

Histones isolated from normal tissue (liver of rats and thymus gland of rats and calves) possess a biological activity that depresses the growth of transplantable cancer of liver mucous membrane due to their action in vitro after their implantation on the tumor cells. This method of isolating histones (homogenized in 0.14 M Na Cl and centrifuged at 1,500 g) and of running experiments did not reveal any organic or species specificity of the suppressing effect of histones on tumor growth. The splitting of histones by proteases destroys their biological activity.

76. RNA and Cathepsin Activity Parallel in Tumors

"A Study of the Proteolytic Activity of Human Brain Tumors," by N. G. Lutsenko and M. Sh. Promyslov, Institute of Neurosurgery imeni Burdenko, Academy of Medical Sciences USSR; Moscow, Voprosy Meditsinskoy Khimii, Vol 9, No 1, Jan 63, pp 60-63

Cathepsin activity is increased in human brain tumors, but its value is not linked to the degree of malignancy. However, there is a parallel between the RNA content and cathepsin activity in the same tumors.

77. Cobalt Indicated in Leukemia Treatment

"Blood Cobalt Content in Children With Leukemia," by L. S. Nalimova, Chair of Children's Diseases, Minsk Medical Institute; Minsk, Zdravookhroneniye Belorussii, No 1, Jan 63, pp 46-47

Observations on 57 children (1-14 years old) showed that the cobalt blood content of children with leukemia during the severe period of this sickness may be within the normal high or low range. As the pathological process progresses and the condition of the patient deteriorates, the cobalt level falls.

78. Improved Treatment of Far-Advanced Cancer

"The Intraarterial Administration of Large Doses of Cytostatic Preparations Under the Protective Effect of Bone-Marrow Transplantations in Far-Advanced Cancer Stages," by Dr O. Kostekal, F. I. Dregenesku, Dr I. Mogosh, and Fl. Demetriu; Moscow, Voprosy Onkologii, Vol 9, No 2, Feb 63, pp 53-60

The authors treated 46 patients in far-advanced cancer stages in whom surgical treatment was not advisable. The treatment consisted of 0.3 mg triethylenemelanin per kg body weight, 3 mg thio-TEPA, and 3 mg sarcolysin administered intra-arterially.

After a course of treatment, there was subjective and objective improvement in all of the patients, and 17 of these patients could be operated on.

79. High-Frequency Current and Ultrasound Carcinogenicity of Oil-Shale Retort Pitch

"The Use of High-Frequency Currents and Ultrasound To Combat the Carcinogenic Properties of High-Temperature Shale Retort Pitch," by O. L. Danetskaya, Trudy Leningradskogo Sanitarno-Gigiyenichnogo Meditsinskogo Instituta (Proceedings of the Leningrad Sanitary-Hygiene Medical Institute), No 73, 1961, p 5 (from Referativnyy Zhurnal -- Elektronika i Yeye Primeneniya, No 1, Jan 63, 1 V 130)

Retort pitch, one of the products of the chamber process of reworking oil shales, proved to be a powerful carcinogenic agent in experimental tests on white mice. To reduce carcinogenic activity, it is recommended that the retort pitch be subjected to high-frequency current and ultrasound at a frequency of 600 kilocycles per second. Experiments showed that the blastomogenicity of the retort pitch is reduced up to 94 percent by exposure to high-frequency currents and up to 78 percent by exposure to ultrasound.

Pharmaceuticals and Biologicals

80. Work of Institute of Fine Organic Chemistry in Yerevan Discussed

"For Man," by I. Gevorkyan, Corresponding Member of the Academy of Sciences Armenian SSR; Yerevan, Kommunist, 18 Jan 63, p 2

A. L. Mndzhoyan has worked in the field of the synthesis of physiologically active compounds for nearly 20 years. The Institute of Fine Organic Chemistry (of the Academy of Sciences Armenian SSR), which he heads, is one of the leading scientific-research centers in its field in the Soviet Union.

Gangleron and Quatoron, which were synthesized by the institute, are today considered some of the most effective medical substances in the treatment of such diseases as stenocardia, ulcers of the stomach and duodenum, endarteritis obliterans (gangrene of the extremities), and so on. These preparations are widely used in the Soviet Union and in some socialist countries.

Arpenal (all substances mentioned in this article were developed by the institute) is very effective in the treatment of bronchial asthma, Parkinson's disease, chorea, and other neuropsychic disorders.

The new medical substance Subekhclin (Corconium) is the best respiratory stimulant, excelling Lobelin and Cytiton.

Among the substances synthesized by the institute that are used in practice in Russia are the new antituberculosis preparation Armazide [Tubazid], the antispasmodic preparation Cypenam, and a new preparation for treatment of bronchial asthma, Fubromegan.

Ditiline, a curare-like preparation, relaxes the muscles and allows the surgeon to operate in such places as the thoracic cavity. Recently, under A. Mndzhoyan's leadership, a new muscle relaxant was synthesized which has been named Bromotilin. This preparation is superior to Ditiline and is already being used in clinics in Armenia; it has been sent for testing to the central clinics of the country.

The work of the Institute of Fine Organic Chemistry in the area of synthesizing medical substances has been a new stimulus for the development and expansion of scientific research work in a number of laboratories and therapeutic establishments in Yerevan.

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Along with the synthesis of new medical substances, Mndzhoyan created at the institute a plant for producing these substances in order to provide the country's therapeutic establishments with them.

At the present time, the institute is working on the creation of new effective medical substances and also on the synthesis and development of new methods of obtaining organic compounds.

In 1962 alone, preparations synthesized by the institute were demonstrated at 17 international exhibits.

The Presidium of the Academy of Sciences Armenian SSR nominated Armenak Levonovich Mndzhoyan for the Lenin Prize for the organization of research in the area of the synthesis of physiologically active compounds and the introduction of new Soviet medical substances into life. A number of scientific-research institutes of the republic and the entire medical community wholeheartedly support this nomination.

81. Inspection Committee Deplores State of Pharmaceutical and Medical Instrument Production at Sverdlovsk

"How Medicine Becomes Deficient," by the inspection brigade of Trud and Meditsinskaya Gazeta: N. Solovev, V. Kudryashov, I. Aykova, V. Yermakov, V. Arsyukhin, and Ye. Arapov; Moscow, Trud 12 Feb 63, p 2

The article complains about the scarcity of certain medicines ("euphillin," "sayodin," and "atophan") put out by the Sverdlovsk chemical-pharmaceutical plant. The plant's equipment is old-fashioned, worn, and inadequate for producing the needed quantities of medicine. The inspiration committee blames the Sverdlovsk Sovnarkhoz for not devoting either enough time or enough money to eliminating these problems.

The article also notes that the Sverdlovsk Medical Electroapparatus Plant is not producing as much as it should because it does not have enough buildings and modern equipment. Also, spare parts for this plant's equipment are difficult or impossible to obtain. These deficiencies result, again, from lack of attention on the part of the sovnarkhoz.

82. Fir Balsam Preparation Used for Healing Wounds -- Complaint About Insufficient Production

"Help for Medicine!"; Moscow, Trud, 1 Feb 63, p 2

The article discusses a preparation made by dissolving the sodium salt of usnic acid in fir balsam, which the Soviet Public Health Ministry recommends for healing fresh and purulent wounds, for use in gynecology, etc. It mentions the use of this preparation by Lt Col V. I. Petrov of the Military-Medical Academy imeni S. M. Kirov for treatment of burns.

Though the usefulness of this preparation has been affirmed by the Public Health Ministry, it is still not being produced in sufficient quantity due to the indifference of the Leningrad sovnarkhoz and its division of chemical production and of the Public Health Ministry itself. Also, the article states that the Leningrad plant "Farmakon," which was assigned production of this preparation, makes continual excuses to avoid producing its quota. The author of this article does not understand why production of the balsam preparation was not assigned to factories of the medical industry which are already preparing fir sap, the raw material for this preparation.

A similar fate has befallen the antiangina preparation "iodinol," developed by the Botanical Institute imeni V. L. Komarov in cooperation with the Veterinary Institute.

83. Uzbek Regional and Experimental Medical Institute Sponsors Expedition for "Mumio" -- Ancient Eastern Medicine

"In the Footsteps of Ancient Doctors," by I. Sigalov; Vilnyus, Sovetskaya Litva, 1 Feb 63, p 4

The medical scientist Khodzha Rasulev, head of the Department of Eastern Medicine at the Institute of Regional and Experimental Medicine of the Uzbek Academy of Sciences, and two other scientists formed an expedition to the mountains of Tashkent in search of "mumio." This viscous, dark substance, which was used during the Middle Ages in India and Persia and is reportedly emitted from rocks during hot weather, is said to possess excellent healing properties for wounds and fractures. The expedition brought back a quantity of the substance, and, according to the article, it was used successfully to heal a fracture in a test rabbit.

Physiology84. Pathological Changes in Vibration Sickness

"Data on the Pathogenesis of Vibration Sickness," by Ye. Ts. Andreyeva-Galanina and N. I. Karpova, Sanitary Hygiene Medical Institute; Moscow, Gigiyena Truda i Professional'nyye Zabolovaniya, No 1, Jan 63, pp 4-8

Experimental research on rabbits (the anterior paws were exposed to vibrations of 1.35 mm amplitude) to clarify the pathogenesis of vibration sickness showed changes in the axis cylinders, Wallerian degeneration, and reactive changes in the intervertebral cells and in the motor cells of the anterior horns of the spinal cord after 47 days of experimental vibration action. Although these experimental results cannot be transferred completely from animals to man because a man's hand compensates for vibration, it should be emphasized that vibrations of 1.35 mm amplitude were very traumatic to rabbits' paws.

85. Optimum Mixture of Gases in Environment of Increased Pressure Not Detrimental to Human Efficiency

Fiziologicheskiye Osnovy Prebyvaniya Cheloveka V Usloviyakh Povyshennogo Davleniya Gazovoy Sredy (Physiological Principles of Exposure of a Human to Environmental Conditions of Increased Gas Pressure), by Genrikh L'vovich Sal'tsman, edited by Corresponding Member of the Academy of Sciences USSR Ye. M. Kreps, Medgiz, Leningrad, 1961, 188 pp

This book is intended for physiologists, pathophysiologicalists, biologists, and those who are specializing in diving and in work involving aëro-embolism.

Varied processes that develop in a human organism during increased oxygen pressure, increased atmospheric pressure, and increased pressure of artificial gas mixtures are discussed in this book. Various types of physiological action of increased pressures are analyzed in the light of modern theories about irritants, the process of irritation, and physiological and pathological reactions.

Methodical procedures have been developed to investigate the condition of a human organism in an environment in which gas pressure is high. These procedures may help to distinguish nervous processes whether they be elementary unconditioned responses or complex cortical reactions. Data obtained as a result of the studies conducted make it possible to improve working conditions and to increase human efficiency under conditions of increased pressure.

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Appendix

Bibliography

86. Reaction of Light-Receiving Apparatus of the Eye to Stimuli Inadequate for Visual Analysor

"Reflex Reaction of External Eye Muscles to Stimulation of Various Receptors of an Organism," by M. V. Korovina, Chair of Normal Physiology, Pediatric Medical Institute, Leningrad; Moscow, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova. Vol 49, No 2, Feb 63, pp 186-191

Experiments on 19 rabbits, both decorticated and with the nervous system intact, are described. Result of these experiments showed that individual external eye muscles react to irritations of various receptors of the body which are not connected with light perception. Reactions of upper, external and lower rectus and upper and lower oblique muscles of the eye to chemical irritations of the mouth cavity, to mechanical irritations of the skin, and to sound and color irritants take the form of increased bioelectric activity in these muscles.

Reaction to reflex excitation of the external eye muscles arises following the latent period and lasts a short time after trace excitation ceases.

87. Conical Cells Strengthen and Weaken Biocurrents in Brain

"Biocurrent Amplifiers"; Moscow, Vechernyaya Moskva, 31 Jan 63, p 1

The electrical currents that arise in the living organism with each muscle contraction or nerve excitation are strengthened a thousand times in the brain. Scientists have long wondered how and where this strengthening occurred.

Prof B. V. Ognev and a group of physiologists succeeded in discovering that the astrocytes of the cerebral cortex externally resemble a conical spiral which the signal enters from the narrow part of the conus. A completely acceptable suggestion was made: the impulses of the electrons that form the biocurrents are dispersed by centrifugal force in a spiral and come out its broad and reinforced.

Such a surprisingly simple adaptation also exists in the brain for weakening signals. It was discovered that the so-called pyramidal cells, from which the motor signals go to the muscles, and also similar to the spiral-conus.

88. Tissue Metabolism of the Resting and Critical Membrane

"Relationships Between Membrane Potential at Rest and Critical Potential in Connection With the Problem of Excitability" by B. I. Khodorov; Moscow, Uspekhi Sovremennoy Biologii, Vol 54, No 3 (6), Nov/Dec 62, pp 333-354

The author discusses the threshold of depolarization, the relationship between resting potential and critical potential during electrotonus, and different factors affecting tissue potential, such as (1) conditions for generating potential action and (2) changes in resting potential (E_0) and critical potential (E_c) due to different actions on excitable formations: the effect of afferent stimulants, pessimal inhibitions of Vvedenskiy, the effect of asphyxia, the effect of potassium ions, the effect of calcium ions, and the effect of local anesthetics. A new insight for the understanding of complex relationships between the stimulants of a tissue and the condition of its metabolism with special emphasis on mechanisms which regulate the magnitude of the resting potential (processes of active and passive transport of ions) and the level of the critical potential of an excitable membrane is presented.

89. Skin Regenerative and Protective Functions Depressed by Castration

"The Effect of Castration on the Regenerative and Protective Functions of the Skin of Animals," by K. A. Kalantayevskaya, Chair of Skin and Venereal Diseases, Kiev Institute for the Advanced Training of Physicians; Moscow, Vestnik Dermatologii i Venerologii, No 2, Feb 63, pp 3-6

The regenerative and protective functions of the skin are closely dependent on the functional condition of higher nervous activity. Castration of animals within 4 months and later led to a delay in the healing of skin wounds, a retardation of hair growth, a significant retardation of the cellular desquamation of the horny layer, a decrease in the permeability of the interstitial substance, and a decrease in the phagocytic activity of the connective tissue cells of the skin of dogs, rabbits, and rats.

90. Scientific Research in Neurology in the USSR

"The Paths of Development of Soviet Neurology," by
Corresponding Member of the Academy of Medical Sciences
USSR Prof Ye. Shmidt and Candidate of Medical Sciences
D. Lunev; Moscow, Meditsinskaya Gazeta, 4 Jan 63, p 3

Although various schools of Russian physiology exerted some influence on the development of Soviet neurology, it is Pavlovian physiology that influenced its development the most. The distinctive feature of Soviet neurology also consists of the fact that it is closely connected with such contiguous disciplines as therapy, psychiatry, pathological anatomy, biochemistry, and virology. The clinicophysiological methods now widely used in neurological research include electrophysiological, biochemical, and biophysical methods of investigation. Leading scientific-research establishments in the USSR have physiological laboratories.

Progress also has been made in morphological technology. Phase contrast microscopy, luminescence microscopy, electron microscopy, and histochemical analysis are now being used.

Theoretical questions are receiving considerable attention. Scientists have been studying the localization of functions in the central nervous system, physiology and pathology of the higher nervous activity, and the mechanisms of such complicated neurological syndromes as disorder in consciousness and in speech. The study of aphasia, the most complicated form of speech defect, made it possible to clarify a number of its pathophysiological mechanisms and to suggest, on the basis of that, effective methods of logopedic treatment.

Experimental models have been used in investigations of the pathogenesis and treatment of various diseases of the nervous system. Restoration and compensation of functions have been receiving the greatest attention.

According to World Health Organization 14% of all deaths are due to vascular disorder of the nervous system. It has been proven that vascular cerebral insufficiency not only causes changes in blood vessels, but also causes decrease in general arterial pressure and weakening in cardiac activity.

Considerable progress has been made by Soviet neuropathologists in the study of tick-borne encephalitis, psychosensory encephalitis, lymphocytic choriomeningitis, and diphasic viral meningo-encephalitis. Acute poliomyelitis is undergoing intensive study.

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The equipment of the respiratory center of the Institute of Neurology is modern. This center has been helpful not only in saving the lives of people whose condition seemed hopeless, but also in cases of chronic poliomyelitis, multiple sclerosis, tetanus, and botulism.

Multiple sclerosis is one of the most widespread diseases of the central nervous system. Soviet researchers have been directing their efforts mainly to define more precisely the etiology of the infectious-allergic nature and to discover the origin of this morbid condition.

Diseases of the peripheral nervous system, particularly those of the lumbosacral part, are responsible for most cases of absenteeism from work. The most frequent causes for those diseases are dystrophic changes in the spinal column and its ligamentous apparatus. Although many methods of treatment of diseases of the peripheral nervous system have been proposed, further studies are needed. It was found that patients often recover completely from persistent pains following surgery in cases of hernia of the intervertebral disks.

Psychiatrists and neurosurgeons are involved in the study of epilepsy. Great importance is currently placed on external factors, particularly those pertaining to birth. Although a number of new preparations made their appearance in the past few years, search for new antiepileptic drugs remains urgent.

Considerable progress has been made as result of comprehensive clinico-physiological, clinico-biochemical, and morphological investigations of pathogenesis of hepato-cerebral dystrophy. Investigations of hepato-cerebral dystrophy helped in detecting the existence of complex interrelation between the liver and the brain in a human organism.

Little attention has been given to the study of neurology in children. Development of this specific field requires the combined effort of neuro-pathologists, psychiatrists, pediatricians, pedagogues, and psychologists.

Complex problems in neuropathology may be successfully solved as more progress is made in general biology, physics, and chemistry. Still greater progress could be made in the field of neurology if neurological establishments are better supplied, within the next few years, with reagents, chemicals, and medical preparations.

91. Various Hypotheses Offered To Explain Rosa's Phenomenal Abilities; Experiments Prove That Other People Can Be Trained To Recognize Color With Fingers

"Again on the Tagil Wonder," articles by several authors; Moscow, Nauka i Zhizn', No 2, Feb 63, pp 92-96

Psychologist P. B. Nevel'skiy, senior scientific associate at Khar'kov State University, suggests that Roza feels with her fingers the infrared rays which are reflected by the objects she is touching. He adds that regardless of which hypothesis about Roza's abilities proves correct, her ability to read with her fingers is a confirmation of the objective existence of color.

L. L. Vasil'yev, Corresponding Member of the Academy of Medical Sciences and professor at Leningrad State University, contends that Roza's abilities lie on the border of ordinary psychic and parapsychic, that is, telepathic, phenomena. Vasil'yev calls "unlikely" from the physiological point of view the hypothesis that the sensitive nerve endings in Roza's finger tips perceive light rays. He points out that cases similar to Roza's were described in the older literature on animal magnetism. Scientists have not succeeded in explaining with complete certainty the energy factor which produces this phenomenon. These factors bring it close to such parapsychic phenomena as clairvoyance.

Personnel of the Laboratory of Vision of the Institute of Biophysics, Academy of Sciences USSR, on the basis of experiments they conducted on Roza in December 1962, state that she "sees" light with her fingers. Associate of the laboratory M. Smirnov, describing how this conclusion was reached, states that the fact that Roza was able to determine color only when the light source came from that part of the spectrum that is visible to the eyes disproves the theory that she was really feeling infrared rays. That is, the perception of light with the fingers, and neither a remarkably well-developed sense of touch nor an exceptional sensitivity to temperature differences, is the basis of Roza's ability. In complete darkness, Roza can neither read nor distinguish colors; this fact, Smirnov notes, contradicts the point of view that this is a parapsychic phenomenon. Roza has this ability, he concludes, because over a long period of practice she developed in her brain an ability to analyze signals sent by the receptors of the skin under the influence of light, signals which are ignored by the brains of untrained people.

Czechoslovakian Parapsychologist Doctor Milan Ryzl shares the opinion of Prof L. L. Vasil'yev and describes some experiments he conducted in which he trained hypnotized subjects in these telepathic abilities. One of his subjects spent several months learning to distinguish by touch forms on cards placed in light-proof converters. In the experiments, all possibilities of sensory perception were excluded, yet she correctly identified 65 out of 75 in one series.

He conducted a series of similar experiment with pupils of a boarding school for blind children in Prague. The goal of these experiments was a preliminary study of the possibility of using extra-sensory perception as a substitute for lost vision. The hypnotized subjects were asked to determine the positions of the hands on the face of a clock. The children attempted to touch the hands with their hands, although they could not, as the fact of the clock was covered. Although not all of the answers in these experiments were correct, there were more correct answers than probability theory would have predicted. Doctor Ryzl concludes that the results of these experiments and the phenomenal abilities of Roza make it possible to argue that under certain special conditions a person can acquire the ability to distinguish objects of the external world without using chromatic sense organs (for example, eyes).

"Recognition of Color With the Fingers" describes experiments which were conducted by Candidate of Pedagogical Sciences Docent A. Novomeyskiy. He did some experiments with members of the editorial staff of Nauka i Zhizn' which demonstrated that after 5 to 10 minutes' training, a person could distinguish red and yellow pieces of paper. One subject reported that the colors felt different: yellow seemed "porous" and "smooth," while red was "sticky." In this series of experiments, Novomeyskiy demonstrated that if two pieces of paper of different colors are placed one on top of the other, it is the color of the bottom piece that will be "perceived" by this subject. He also mentions that he trained some students to detect the form of drawn objects using their fingers alone.

In "The Dermo-optic Sense -- A Characteristic of Many People," Novomeyskiy describes some of the experiments he has done with students in the Psychology Laboratory of Nizhnyy-Tagil Pedagogical Institute. He claims that approximately one person in six has the ability to distinguish dark and light and color differences with his fingers. The experiments he has done convinced him that what is being studied is not ordinary vision, but a sense as yet unknown to science. He calls this the dermo-optic sense.

Novomeyskiy briefly discusses the experiments that were conducted on Roza, noting that while in many ways her fingers reacted as our eyes do while reading (for example, they moved rapidly over the words she was reading), some differences were also observed. For example, yellow objects illuminated with red light would look orange to the eyes, but were light blue to Roza. Green objects in a red light look yellow to the eyes; Roza "saw" them as dark blue.

Like Roza, the students who had been trained to distinguish color with their fingers "saw" nothing in the absence of light -- i.e., in a dark room.

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Novomeyskiy explains the tactile vision of Roza and his students in this way. When their fingers feel a colored surface, forms of skin sensitiveness, rather than visual sensations, arise in the brain. The visual centers, no doubt, participate in their origin, for the neural process is transferred from the dermal analyzer to the cortical centers of the visual analyzer. However, the perceived images appear to the person, not as visual, but as ordinary touch sensations. Not one of the subjects pictured "red," "green," "yellow," or "blue," as in the process of seeing, but sensed touching "squares," "wavy lines," "crosses," and "dots," although they reacted not to the structure but to electromagnetic vibrations. The subjects sensed the degree of "smoothness" or "roughness" of the color, and defined it as "slippery" or "braking," inhibiting."

It was at first believed that Roza recognized color by the surface structure of the colored object. However, the scientists realized their mistake when, in the process of the investigations, Roza learned to recognize color without touching the object itself. The hypothesis of dermo-optic perception belongs to the Sverdlovsk scientists.

We must think, Novomeyskiy concludes, that in the future a more correct classification of dermo-optic sensations will be developed. In any case, the study of the dermo-optic sense in a number of people will undoubtedly play a large role in the further development of such sciences as optics, physiology of the sense organs, psychology, pedagogy, and the theory of knowledge.

92. Toes That See

"A Woman Who Sees With Her Fingers"; Budapest, Orszag-Vilag,
Vol 7, No 8, 20 Feb 63, p 12

When Rosa Kuleshova, the young woman who was found to be able to read with her fingers, was subjected to further examinations by physicians in Sverdlovsk, it was found that she could read with her toes as well as her fingers.

93. Research on Form and Color Perception by Fingers Continues

"Seeing With the Fingers - or 'Skin-Optic Sensation,'" by
Peter Vajda; Budapest, Nepszabadsag, 24 Mar 63, p 11

Candidate Novomayskiy and his colleagues are continuing their research on the ability of the fingers to determine color and form. They found that in the case of the congenitally blind, only a few could be taught to differentiate between four discs of different color. Also, in the case of the blind, it made no difference whether or not there was light in the room.

Psychiatry94. Increase in Psychoneurological and Neuropsychiatric Service in RSFSR

"Progress in the Field of Psychiatry in the RSFSR; Decree of the Central Committee of the CPSU and the Council of Ministers USSR of 14 January 1960 and Further Improvement in Psychoneurological Aid," by I. A. Berger, Scientific-Research Institute of Psychiatry, Ministry of Health RSFSR, Moscow; Moscow, Zhurnal Nevropatologii i Psikhatrii imeni S. S. Korsakova, Vol 62, No 10, 1962, pp 1,593-1,596

The improvements that have been made in medical aid to mental patients in the past 2 years in the RSFSR are discussed in this report. This was done in response to a decree of the Council of Ministers USSR, dated 14 January 1960, which stressed the need for greater effort to improve medical service to mental patients. Many new buildings have been constructed throughout the RSFSR to house psychoneurological hospitals with sections for children, as well as somatic outpatient clinics and children's dispensaries. Although little progress has been made in a number of oblasts of the RSFSR, the number of psychiatric beds has increased considerably in 52 krays and oblasts of the republic.

Table 1, below, shows the number of beds that became available during 1960 and 1961 in newly constructed and remodeled buildings of each kray, oblast, and ASSR of the RSFSR.

ASS, Kray, Oblast, City	Number of Beds	ASSR, Kray, Oblast, City	Number of Beds
Vladimirskaia Oblast	1,320	Kaliningradskaya Oblast	300
Moscow	1,000	Lipetskaya Oblast	280
Moskovskaya Oblast	725	Kirovskaya Oblast	275
Krasnodarskiy Kray	720	Ul'yanovskaya Oblast	230
Bashkirskaya ASSR	700	Khabarovskiy Kray	225
Kemerovskaya Oblast	700	Ivanovskaya Oblast	215
Sverdlovskaya Oblast	615	Volgogradskaya Oblast	200
Kaluzhskaya Oblast	610	Yaroslavskaya Oblast	200

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<u>ASSR, Kray, Oblast, City</u>	<u>Number of Beds</u>	<u>ASSR, Kray, Oblast, City</u>	<u>Number of Beds</u>
Saratovskaya Oblast	600	Leningradskaya Oblast	95
Stavropol'skiy Kray	600	Irkutskaya Oblast	180
Krasnoyarskiy Kray	520	Chuvashskaya ASSR	175
Oreburgskaya Oblast	515	Kostromskaya Oblast	170
Gor'kovskaya Oblast	500	Primorskiy Kay	170
Omskaya Oblast	500	Tyumenskaya Oblast	160
Tul'skaya Oblast	500	Smolenskaya Oblast	150
Leningrad	450	Kurganskaya Oblast	150
Belgorodskaya Oblast	450	Novosibirskaya Oblast	150
Udmurtskaya ASSR	420	Karel'skaya ASSR	150
Chelyabinskaya Oblast	405	Kabardino-Balkarskaya ASSR	140
Arkhangel'skaya Oblast	400	Kalininskaya Oblast	140
Krasnoyarsk	375	Permskaya Oblast	130
Tatarskaya ASSR	370	Mariyskaya ASSR	100
Ryazanskaya Oblast	365	Magadanskaya Oblast	75
Pskovskaya Oblast	350	Orlovskaya Oblast	70
Chitinskaya Oblast	350	Tambovskaya Oblast	65
Bryanskaya Oblast	300	Checheno-Ingushskaya ASSR	<u>50</u>
		Total	18,705

The decree of the RSFSR government of 30 September 1961 (No 1,227) specified that 8,700 beds be made available for mental patients in new hospitals and 4,320 beds be made available in psychiatric colonies during the 2-year period between 1962 and 1964.

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Improvement in the quality of psychoneurological aid in the RSFSR is connected to a considerable extent with the development of psychoneurological establishments rendering outpatient care. As shown in Table 2 below, a total of 238 such establishments were organized over the two-year period of 1960 and 1961.

<u>ASSR, Kray, Oblast, City</u>	<u>Oblast and City</u>	<u>Inter-rayon Dispensaries</u>	<u>Psycho- neurological Offices of Somatic Outpatient Clinics in Rayons</u>
Primorskiy Kray	1	--	--
Belgorodskaya Oblast	1	--	--
Orlovskaya Oblast	--	--	3
Vladimirskaya Oblast	--	--	25
Tyumenskaya Oblast	--	--	6
Lipetskaya Oblast	--	1	3
Voronezhskaya Oblast	--	1	1
Kalinin	--	2	7
Kursk	--	--	21
Perm'	1	2	--
Leningrad	2	--	5
Moskovskaya Oblast	--	4	5
Omsk	--	--	3
Leningradskaya Oblast	--	--	3
Krasnoyarskiy Kray	1	1	10
Udmurtskaya ASSR	--	--	medico- sanitary units
Kuybyshevskaya Oblast	1	--	4

C-O-N-F-I-D-E-N-T-I-A-L

<u>ASSR, Kray, Oblast, City</u>	<u>Oblast and City Dispensaries</u>	<u>Inter-rayon Dispensaries</u>	<u>Psycho- neurological Offices of Somatic Outpatient Clinics in Rayons</u>
Ryazanskaya Oblast	--	2	29
Kostromskaya Oblast	1	--	--
Krasnodarskiy Kray	--	--	21
Stavropol'skiy Kray	--	1	7
Checheno-Ingushskaya ASSR	--	--	9
Kabardino-Balkarskaya ASSR	1	--	--
Ul'yanovskaya Oblast	--	1	6
Tatarskaya ASSR	1	--	2
Chelyabinskaya Oblast	--	--	3
Novgorodskaya Oblast	2	--	1
Smolenskaya Oblast	1	--	6
Murmanskaya Oblast	1	--	1
Yaroslavskaya Oblast	1	5	6
Irkutskaya Oblast	--	3	--
Volgograd	1	--	7
Tambovskaya Oblast	--	1	1
Kaliningrad	1	--	--

Therapeutic and preventive medical aid to people suffering from alcoholism is in an important phase of development. This consists of out-of-hospital psychoneurological work.

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The last 2 years saw expansion of the network of narcological offices, commissioning of 5 new narcological dispensaries, and 300 beds made available in hospitals for narcological patients. A number of local conferences and an All-Russian conference on the treatment and prevention of alcoholism were held in the past 2 years.

The Institute of Psychiatry, Ministry of Health RSFSR, and the Institute imeni Bekhtereva did considerable consultative work in psychoneurological hospitals of krays and oblasts during 1961 and 1962.

Psychology

95. Greater Attention to Psychological Aspects of Disease Called For

"Medicine, Psychology, and the Patient," by Ye. Borovik, scientific worker of the Institute of Psychology, Academy of Pedagogical Sciences RSFSR; Moscow, Meditsinskaya Gazeta, 2 Nov 62, p 3

This article discusses some aspects of medical psychology, a field which, the author says, should be given a prominent place in the Soviet Union in the complex of scientific disciplines which help to guard the health of the population.

At the present time, the field of activity of medical psychology has broadened significantly. Physicians and psychologists actively collaborate in several different areas: the study of very fine changes in the psyche, the differential diagnosis of complex psychic disturbances, the reduction of pathologically changed functions in cases of brain lesions and developmental defects, and also the areas of forensic medical expertise and expertise in the work capacity and work organization of invalids.

The study of such problems as hypnosis, dreams, sexual perversions, and questions of so-called psychosurgery, psychopharmacology, and so on is equally interesting for both psychology and medicine. In many of these areas, Soviet psychologists have obtained results which are of significant interest for practice.

Present-day medicopsychological research is based, on the one hand, on descriptive-psychological analysis of the patient or, on the other, on strictly objective experimental data subjected to measuring and mathematical processing. The combination of descriptive-psychological analysis with experimental study of the pathophysiology of higher nervous activity ought to be considered the most prospective method at the present time.

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Scientific data on the psyche of the patient in general ought to be made available to the doctor, along with the study of nervous and psychic diseases. Unfortunately, there is a deficiency of scientific-research work in this area, due to the absence of psychology laboratories at therapeutic clinics.

We can no longer reconcile ourselves to the situation where the physician, examining and questioning a coronary patient, for example, does not have available a detailed description of the patient's psychological symptoms or a single terminology which characterizes the character and location of the painful sensations. This, of course, refers not only to cardiology, but also to the semiotics of diseases of all internal organs. To rectify this situation, even now corresponding scientific-research work out to be organized at medical institutes and therapeutic clinics.

The problem of verbal intercourse between patient and physician is one of the most important sections of medical psychology. Psychological tact plays a large role here. For example, even the name of the disease must be said with care, for often this can have a strong effect on the patient.

Public Health

96. Complaints About Laxities in Moscow Medical Service

"A Spot on the Robe," by Yu. Zolotarev; Moscow, Moskovskaya Pravda, 1 Feb 63, p 3

The article describes two instances of careless, incorrect diagnosis by Moscow doctors which resulted in the death of their patients. The article also complains that in at least one of these incidents, the erring physician a drug addict, according to the article, not forbidden to do further medical work, but was simply transferred to a lower position.

97. Progress in Maternal and Child Care in RSFSR Described

"Further Improvement in Maternal and Child Health Protection," by the Deputy Minister of Health RSFSR; Moscow, Voprosy Okhrany Materinstva i Detstva, Vol 8, No 1, Jan 63, pp 3-7

Problems and recent advances in the medical and nursing aspects of obstetrics, gynecology, and care of the newborn are the subject of this article.

Local councils and party organizations are giving considerably greater attention to maternal and child health care. Pregnant women are given comprehensive health education in consultation centers, and the number of free children's clinics, day-care centers, and milk kitchens increased during the period from 1960 through 1961. The government of the RSFSR has allocated sufficient money to have milk and milk products distributed to all children under one year of age free of charge. This improvement and increase in service to mothers and children has been in response to the decree of the Central Committee of the CPSU and the Council of Ministers of 14 January 1960, which ordered health agencies and party organizations to expand and improve both maternal and child health care.

A total of 295 children's consultation centers and outpatient clinics were commissioned during the 1960-1961 period. The number of hospital beds in children's hospitals and wards for children increased by 16,108, and the number of obstetrico-gynecological beds increased by 13,558 during that period.

98. Redesigning of New Merchant Ships To Avoid UHF Irradiation

"Ultrahigh Frequency Electromagnetic Waves Aboard Merchant Ships," by Ye. L. Kulikovskaya, Institute of Labor Hygiene and Occupational Diseases; Moscow, Gigiyena, Truda i Professional'nyye Zabolevaniya, No 2, Feb 63, pp 24-27

The crews of ships equipped with modern radar stations may be exposed to the effects of irradiation by ultrahigh-frequency emission fields of significant intensities.

In designing the height of the antenna above the upper bridge and the superstructure of the vessel, one should bear in mind hygienic measures against possible irradiation.

The usual antenna height (4.5 meters) is inadequate for merchant ships with one deck and even less adequate for vessels with two decks.

Surgery

99. Czechoslovak Hypothermy Instruments

"Cooling Technology in Development of Medicine," by Docent Engr Dr Vladimir Enekl of the Advanced Technical School in Brno; Bratislava, Technicka Prace, Vol 15, No 1, Jan 63, pp 17-21

The article describes the principles involved in the use of hypothermia in surgery, particularly open-heart surgery, and the various instruments used in this procedure, including recently developed Czechoslovak instruments. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the Slovak Publishing House for Technical Literature)

Toxicology

100. ATP-ase Inhibition by Polonium

"Water-Soluble Adenosinetriphosphatase in Organs of Rats Poisoned by Polonium," by M. G. Zotova; Moscow, Radiobiologiya, Vol 3, No 1, Jan/Feb 63, pp 21-23

ATP-ase undergoes significant changes during acute polonium intoxication. Decreased enzyme activity (by 12-20 percent) occurs during the first few days of radiation sickness, and the maximum decrease of the biocatalytic activity of the enzyme (by 50-60 percent) occurs on the 5th-7th days after intoxication.

IV. VETERINARY MEDICINE

101. Careless Sanitary-Veterinary Control Harms Kazakhstan Livestock

"It Is Your Duty, Veterinary," by L. Kopichay, director of the Kurgan-Tyubinskaya Inter-Rayon Veterinary Bacteriological Laboratory; Dushanbe, Kommunist Tadzhikistana, 15 Feb 63, p 3

The article notes careless observance of the Soviet Veterinary Statutes in the Kolkhozabad, Kuybyshev, and Kurgan-Tyubin regions. Improper or nonexistent quarantine of infected animals and the use of infected food have caused great livestock losses. The article also mentions the lack of veterinary inspection of animals sold at the markets along the Vakhsh Valley.

102. Work on Foot-and-Mouth Disease Vaccines

"Results of Testing VIEV Experimental Rabbit Anti-Foot-and-Mouth Disease Vaccine Under Production Conditions," by F. F. Lutsevich, Tr. Vses. In-ta Eksperim. Veterinarii (Works of the All-Union Institute of Experimental Veterinary Medicine), No 25, 1961, pp 99-102 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B113)

[No abstract given.]

"Results of a Study of a Foot-and-Mouth Virus Vaccine," by S. I. Voinov, G. A. Kozlovskiy, M. P. Gorokhova, and L. V. Savchenko, Tr. Gos. Nauchno-Kontrol'n. In-ta Vet. Preparatov (Works of the State Scientific-Control Institute of Veterinary Preparations), No 10, 1962, pp 75-82 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B114)

[No abstract given.]

"Data on the Preparation and Control of a Lapinized Aluminum Hydroxide Vaccine Against Foot-and-Mouth Disease During 1958-1961," by S. R. Dneprov and M. P. Gorokhova, Tr. Gos. Nauchno-Kontrol'n. In-ta Vet. Preparatov (Works of the State Scientific-Control Institute of Veterinary Preparations), No 10, 1962, pp 86-89 (from Referativnyy Zhurnal -- Biologiya, No 3, Feb 63, Abstract No 3B115)

[No abstract given.]

V. NEWS ITEMS

Aid to Underdeveloped Countries

103. Extent of Soviet Aid to Algerian Refugees

"A Meeting of Friends," by V. I. Semukha, Chairman of the Central Committee of Red Cross Society, Belorussian SSR; Minsk, Zdravookhraneniye Belorussii, No 11, Nov 62, pp 92-93

"Displaying the good will of millions of its members and of members of all organized groups in the USSR, the Soviet Red Cross has always rendered and is still rendering aid to the populations of countries suffering from different disasters.

"The people of Algeria fought bravely for their freedom and independence for more than 7 years. Thousands upon thousands of Algerian children, women, and the aged who fled to Morocco and Tunis found themselves in a condition of extreme want.

"The Soviet Red Cross repeatedly sent food products, clothing, and medicaments to Algerian refugees in Morocco and Tunis. The cargo sent to Tunis in February 1958 consisted of 10 tons of sugar, 5 tons of rice, 2 tons of dried milk, 25 meters of cloth of various kinds, 2,500 blankets, and a considerable amount of medicaments. In June 1958, that shipment was supplemented by 50 tons of sugar, 20 tons of condensed milk, and 20 tons of soap. Telegrams expressing deep gratitude for the aid given were sent from Tunis to G. A. Miterev, chairman of the Soviet Red Cross. In May 1959, the Soviet Red Cross sent 1,000 tons of wheat, 50 tons of sugar, and 50,000 jars of condensed milk to Morocco. This cargo arrived in Casablanca, a port in Morocco. In reporting arrival of the cargo and its distribution among the most needy refugees, Deputy Chairman of the Moroccan Red Crescent Society, Khadzh Mohamed Sabti, expressed his sincere gratitude for this gesture of friendship.

"The Soviet Red Cross sent another cargo to Casablanca. This cargo left Odessa in September 1960 and consisted of 1,000 blankets, 20,000 meters of cloth, 5 tons of soap, 1,100 tons of wheat flour, 20 tons of sugar, 20,000 jars of condensed milk, and medicaments worth 50,000 rubles. In 1961 the Soviet Red Cross sent two roentgenodiagnostic apparatus to the Algerian Red Crescent.

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"Taking into consideration that the number of Algerian refugees rose to 300,000 people and that refugees in Tunis were in a particularly difficult situation, the executive committee of the Union of Red Cross and Red Crescent Societies USSR resolved to send them another cargo. The following articles were shipped to Tunis on the Soviet vessel 'Floreshty' on 28 February 1962: 100 tons of wheat flour, 15 tons of refined sugar, 20,000 jars of condensed milk, 40,000 meters of cotton cloth, 20 tons of soap, and 10,000 rubles' worth of medicaments. The vessel arrived in Tunis on 15 March. An official ceremony was held that same day transferring the gift of the Soviet people to Red Crescent Society of Algeria. Ben Bakmet, the chairman of the Red Crescent Society of Algeria, acknowledged receipt of the gift with very warm thanks.

"After the cargo was removed from the vessel, we were invited to visit two schools situated not far from Tunis. Algerian children whose relatives died in the struggle against the French colonizers live and go to school here. Older children go to school in the small town of Vel' Mgedi. Their children work in a shop in which the two milling machines are the gift of Soviet trade unions.

"A home for young Algerian orphans is located in the small town of Yasmin. Those children have gone through much suffering in their lives. We saw one boy 8-9 years of age without a right eye and another without a left arm, which had been torn off by a shell fragment. They had a sorrowful look on their faces, a silent reproach of the unjust and cruel war of the imperialists in Algeria.

"We visited a hospital for Algerians convalescing from wounds. It is situated in the little town of Nassen'. Here we met heroes of the war of liberation. Shells and bombs had severed the arms and legs of many. Daudar Labidi is without a right leg: he fought with partisans for many years. Malek Labeled was wounded in the head: he was a tankman. Aut'ya Molya fought in the ranks of partisans for 6 years and downed a few enemy planes: he was hit in the hip in 1960. They are all unselfish fighters for freedom, for the liquidation of colonialism. While fighting within the ranks of partisans, they dreamed of peace and about the bright future of their country.

"While we were visiting the hospital, comrades of the wounded were visiting. It was a warm meeting! The wounded and the fighting men carried on an animated conversation, not about the war, even though the war was still going on, but about the building of a new, free Algeria.

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"We arrived at one of the refugee camps. The Algerian-Tunis border is not far from the camp. The camp has 1,000 refugees, 600 of whom are children. They have been receiving supplies from distributing posts of military units. Much was heard about the difficult conditions under which the Algerian refugees had to live. But what our eyes saw surpassed all our imaginations. We were shaken to the depths of our souls.

"Representatives of the Red Crescent Society of Algeria said that carrying out preventive medical measures, reducing the incidence of tuberculosis and other diseases among refugees has been their most difficult problem. Algerians do not have sufficient resources for this. We visited a 150-bed hospital in the city of Gardiman, where wounded and refugees are being treated. An automobile with a new party of wounded arrived, at that time, from an area which was subjected to gunfire of French artillery.

"After many years of struggle, the heroic Algerian people have won their independence and freedom at a price of countless lives and much suffering.

"Algerians are now returning and are building a peaceful and a happy life."

104. Soviet Red Cross Sends Blankets to Tunisia

"Soviet Aid to Tunisia"; Moscow, Trud, 3 Feb 63, p 3

The Soviet Red Cross has sent a shipment of blankets to help the flood-stricken population of southern Tunisia.

Conferences

105. Czechoslovak Conference on Infectious Diseases

"Medical Societies"; Prague, Casopis Lekaru Ceskych, Vol 102, No 6, 8 Feb 63, p 165

The Infectious Diseases Section of the Czechoslovak "Jan Ev. Purkyne" Medical Society will conduct a national work conference in Spindleruv Mlyn on 18-19 April 1963. The program will be as follows:

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- I. Main Topic: Side Effects of Medicines in Infectious Diseases
 - A. In Treatment With Antibiotics
 - B. In Treatment With Chemotherapeutics
 - C. In Treatment With Cortisones
- II. Free Topics
- III. Training in Infectious Diseases at Medical Faculties

Applications for participation are to be submitted not later than 31 March 1963 to Ladislav Kral, MD, Assistant at the Infectious Diseases Clinic, Medical Faculty, Hradec Kralove. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, 1963)

106. Conference on Modern Therapy in Czechoslovakia

"Medical Societies"; Prague Casopis Lekarů Ceských, Vol 102, No 10, 8 Mar 63, p 279

The Institute for Postgraduate Medical Training and the Society of Czech Physicians, a general section of the Czechoslovak "Jan Ev. Purkyně" Medical Society, will hold a scientific conference in Prague on 30 October-1 November 1963. The main topic will be "Modern Therapy and Work Capability." Applications to present papers related to this topic are to be submitted by 30 March 1963 to Ludvik Kremlicka, MD, secretary of the conference, Ophthalmology Faculty, Institute for Postgraduate Medical Training, Prague 8-Liben, Bulovka Hospital. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, Prague, 1963)

107. Rheumatological Conference in Czechoslovakia

"Medical Societies"; Prague, Casopis Lekarů Ceských, Vol 102, No 6, 8 Feb 63, p 165

On the occasion of the tenth anniversary of its establishment, the Research Institute for Rheumatic Diseases in Prague and its branch facility in Piestany, in cooperation with the Rheumatology Section of the Czechoslovak "Jan Ev. Purkyně" Medical Society, will hold a scientific conference, with international participation, in Prague on 21-23 May 1963. Applications for quarters during the conference are to be submitted not later than 31 March 1963 to the secretariat of the conference at Prague 2, Na slupi 4. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, 1963)

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108. Czechoslovak Internal Medicine and Hematology Meeting

"Medical Societies"; Prague, Casopis Lekaru Ceskych, Vol 102, No 6, 8 Feb 63, p 165

The Slovak Branch of the Internal Medicine Section of the Czechoslovak "Jan Ev. Purkyne" Medical Society and its Hematology-Transfusion Commission and the Hematology Section of the Society and its Transfusion Commission will hold a work meeting in the auditorium of the First Internal Medicine Clinic in Bratislava, Mickiewiczova 13 on 22-23 March 1963. (FOR OFFICIAL USE ONLY) (COPYRIGHT by the State Medical Publishing House, 1963)

109. International Conference on Morphology in Czechoslovakia

Budapest, Orvosi Hetilap, Vol 104, No 7, 17 Feb 63, p 335

The "Jan Ev. Purkyne" Medical Society of Czechoslovakia is sponsoring an International Congress on Morphology between 24 and 29 June 1963. The main topics of the congress will be: experimental morphology, neuroanatomy, cytology (with emphasis on electron microscopic cytology), and growth morphology.

The congress will be held in Olomouc and is being arranged by Dr R. Pegrin, Institute of Anatomy, Palacky University, Hnevotinska 3, Olomouc.

110. Second International Conference on Hematology in Hungary

Budapest, Orvosi Hetilap, Vol 104, No 6, 10 Feb 63, p 287

The Hematology Section of the Special Group for Internal Medicine will hold the Second International Conference on Hematology in November 1963 in the city of Pecs. Hungarian and foreign lectures will be delivered.

The address of the Arrangements Committee is: I sz. Belgyogyaszati Klinika, Pecs 1, Garai u 3 sz.

Prof Imre Barta, MD, will preside over the meeting. Lecture titles must be submitted to the above address by 15 April, and lecture abstracts, no later than 30 May 1963.

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111. International Conference on Otorhinolaryngology

"International Conference on Otorhinolaryngology";
Bucharest, Muncitorul sanitar, 28 Feb 63, p 4

The Union of Medical Science Societies of Rumania announces that an International Conference on Otorhinolaryngology will take place in Budapest on 18-22 September 1963. The conference will be organized by the otorhinolaryngological societies of Hungary, East Germany, and Czechoslovakia and will concern itself with the following topics: (1) occupational traumas to hearing organs and (2) tumors of nasal sinuses.

Miscellaneous

112. Medical Course for East German Reserve Officers

Berlin, Jahresprogramm 1963, p 43

The following item is published in a pamphlet listing all medical courses scheduled to be held in East Germany during 1963, which is issued by the German Academy for Medical Training in Berlin.

"A military-medical training course for reserve officers and public health physicians will be held during 9-14 December 1963. The location will be announced later. The course will be conducted by Navy Captain Medical Counselor Dr RING of the Ministry of National Defense. The chief topic will be 'Organization and Tactics of the Medical Service and Medical Safeguards for National Defense.'

"Participation is by special invitation only."

* * *



Washington, D.C. 20505

7 September 2004

Ms. Roberta Schoen
Deputy Director for Operations
Defense Technical Information Center
7725 John J. Kingman Road
Suite 0944
Ft. Belvoir, VA 22060

Dear Ms. Schoen:

In February of this year, DTIC provided the CIA Declassification Center with a referral list of CIA documents held in the DTIC library. This referral was a follow on to the list of National Intelligence Surveys provided earlier in the year.

We have completed a declassification review of the "Non-NIS" referral list and include the results of that review as Enclosure 1. Of the 220 documents identified in our declassification database, only three are classified. These three are in the Release in Part category and may be released to the public once specified portions of the documents are removed. Sanitization instructions for these documents are included with Enclosure 1.

In addition to the documents addressed in Enclosure 1, 14 other documents were unable to be identified. DTIC then provided the CDC with hard copies of these documents in April 2004 for declassification review. The results of this review are provided as Enclosure 2.

We at CIA greatly appreciate your cooperation in this matter. Should you have any questions concerning this letter and for coordination of any further developments, please contact Donald Black of this office at (703) 613-1415.

Sincerely,

A handwritten signature in cursive script that reads "Sergio N. Alcivar".

Sergio N. Alcivar
Chief, CIA Declassification Center,
Declassification Review and Referral
Branch

Enclosures:

1. Declassification Review of CIA Documents at DTIC (with sanitization instructions for 3 documents)
2. Declassification Status of CIA Documents (hard copy) Referred by DTIC (with review processing sheets for each document)



Processing of OGA-Held CIA Documents

The following CIA documents located at DTIC were reviewed by CIA and declassification guidance has been provided.

OGA Doc ID	Job Num	Box	Fldr	Doc	Doc ID	Document Title	Pub Date	Pages	Decision	Proc Date
AD0463342	78-03109A	55	1	2	88	Consolidated Translation Survey For April 1965	4/1/1965	190	Approved For Release	3/25/2004
AD0465168	78-03109A	55	1	3	89	Consolidated Translation Survey For May 1965	5/1/1965	245	Approved For Release	3/25/2004
AD0467068	78-03109A	55	1	4	90	Consolidated Translation Survey For June 1965	6/1/1965	221	Approved For Release	3/25/2004
AD0468849	78-03109A	55	1	5	91	Consolidated Translation Survey For July 1965	7/1/1965	218	Approved For Release	3/25/2004
AD0471155	78-03109A	55	1	6	92	Consolidated Translation Survey For August 1965	8/1/1965	236	Approved For Release	3/25/2004
AD0473500	78-03109A	55	1	7	93	Consolidated Translation Survey For September 1965	9/1/1965	221	Approved For Release	3/25/2004
AD0474384	78-03109A	55	1	8	94	Consolidated Translation Survey For October 1965	10/1/1965	181	Approved For Release	3/25/2004
AD0475860	78-03109A	55	1	9	95	Consolidated Translation Survey For November 1965	11/1/1965	305	Approved For Release	3/25/2004
AD0477388	78-03109A	56	1	1	96	Consolidated Translation Survey For December 1965	12/1/1965	181	Approved For Release	3/25/2004
AD0478471	78-03109A	56	1	2	97	Consolidated Translation Survey For January 1966	1/1/1966	198	Approved For Release	3/25/2004
AD0479675	78-03109A	56	1	3	98	Consolidated Translation Survey For February 1966	2/1/1966	354	Approved For Release	3/25/2004
AD0481681	78-03109A	56	1	4	99	Consolidated Translation Survey For March 1966	3/1/1966	237	Approved For Release	3/25/2004
AD0334379	78-03117A	191	1	37	4255	Status And Activities Of Prominent Scientists In Communist China In 1962	1/29/1963	53	Approved For Release	3/29/2004
AD0333974	78-03117A	190	1	35	4212	Scientific Information Report Outer Mongolia (1)	1/17/1963	27	Approved For Release	3/29/2004
AD0335202	78-03117A	195	1	13	4394	Scientific Information Report Outer Mongolia (2)	3/13/1963	27	Approved For Release	3/25/2004
AD0332657	78-03117A	183	1	13	3924	Scientific Information Report Biology And Medicine (22)	10/12/1962	76	Approved For Release	3/29/2004
AD0333147	78-03117A	185	1	30	4020	Scientific Information Report Biology And Medicine (23)	11/16/1962	90	Approved For Release	3/29/2004
AD0333427	78-03117A	188	1	13	4112	Scientific Information Report Biology And Medicine (24)	12/13/1962	84	Approved For Release	3/29/2004
AD0334160	78-03117A	190	1	10	4187	Scientific Information Report Biology And Medicine (25)	1/10/1963	69	Approved For Release	3/29/2004
AD0334612	78-03117A	193	1	10	4310	Scientific Information Report Biology And Medicine (26)	2/20/1963	112	Approved For Release	3/29/2004
AD0335309	78-03117A	195	1	32	4413	Scientific Information Report Biology And Medicine (27)	3/20/1963	110	Approved For Release	3/29/2004
AD0336242	78-03117A	198	1	16	4509	Scientific Information Report Biology And Medicine (28)	4/12/1963	81	Approved For Release	3/29/2004
AD0332575	78-03117A	184	1	6	3957	Scientific Information Report Chemistry And Metallurgy (22)	10/23/1962	47	Approved For Release	3/29/2004
AD0333164	78-03117A	187	1	2	4061	Scientific Information Report Chemistry And Metallurgy (23)	11/28/1962	65	Approved For Release	3/25/2004
AD0333857	78-03117A	189	1	22	4160	Scientific Information Report Chemistry And Metallurgy (24)	1/2/1963	57	Approved For Release	3/29/2004
AD0334310	78-03117A	191	1	20	4238	Scientific Information Report Chemistry And Metallurgy (25)	1/28/1963	52	Approved For Release	3/29/2004