

UNCLASSIFIED

AD **406 400**

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION, ALEXANDRIA, VIRGINIA



UNCLASSIFIED

AD No. 406400

FILE COPY

406 400



JPRS: 17,385

S&T

30 January 1963

Scale - 2

SCIENTIFIC CONVENTIONS AND CONFERENCES:
 FOURTEENTH CONFERENCE OF PHYSIOLOGISTS OF SOUTHERN RSFSR
 by Ye. K. Aganyants and V. M. Pokrovskiy
 - USSR -

DDC
 RECEIVED
 JUN 20 1963
 IJIA E

U. S. DEPARTMENT OF COMMERCE
 OFFICE OF TECHNICAL SERVICES
 JOINT PUBLICATIONS RESEARCH SERVICE
 Building T-30
 Ohio Drive and Independence Avenue, S.W.
 Washington 25, D. C.

Price: \$.50

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

FOREWORD

This publication was prepared under contract for the Joint Publications Research Service, an organization established to service the translation and foreign-language research needs of the various federal government departments.

The contents of this material in no way represent the policies, views, or attitudes of the U. S. Government, or of the parties to any distribution arrangements.

PROCUREMENT OF JPRS REPORTS

All JPRS reports are listed in Monthly Catalog of U. S. Government Publications, available for \$4.50 (\$6.00 foreign) per year (including an annual index) from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Scientific and technical reports may be obtained from: Sales and Distribution Section, Office of Technical Services, Washington 25, D. C. These reports and their prices are listed in the Office of Technical Services semimonthly publication, Technical Translations, available at \$12.00 per year from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Photocopies of any JPRS report are available (price upon request) from: Photoduplication Service, Library of Congress, Washington 25, D. C.

SCIENTIFIC CONVENTIONS AND CONFERENCES:
FOURTEENTH CONFERENCE OF ~~PHYSIOLOGISTS~~ OF SOUTHERN RSFSR

Following is the translation of an article by Ye. K. Aganyants and V. M. Pokrovskiy in the Russian language periodical Fiziologicheskiy zhurnal SSSR imeni I. M. Sechenova (Physiological Journal of the USSR Imeni I. M. Sechenov), Vol 48, No 12, December 1962, pages 1,523 - 1,525.7

Krasnodar

The fourteenth Conference of Physiologists of Southern RSFSR was held in Krasnodar from 4 to 8 June 1962. A total of 156 reports were read and discussed on various questions related to the following problems: physiology of the central nervous system, higher nervous activity, electrophysiology, hypothermia and anesthesiology, mechanisms of blood coagulation, physiology of circulation and respiration, effect of resort factors on the organism.

In his report on "The Chemical Bases of Excitation of the Nerve Cell," A. B. Kogan (Rostov on the Don) discussed the contemporary achievements in neurophysiology, biophysics and biochemistry which have disclosed the possibility of penetrating the physico-chemical nature of nerve processes. A comparison of the electrophysiological, histochemical and microstructural indices of activity of the nerve cells reveals a definite relationship between excitation of the nerve cell and its cytochemical characteristic. Moderate stimulation of the nerve cell is accompanied by an increase in quantity of RNK in the neuroplasma, while prolonged stimulation leads to a decrease. With excitation of the nerve cell there is a change in activity in it of succinodehydrases, of acid and alkaline phosphatase, and there is a shift in potassium with reference to the cellular membranes.

T. V. Ivannikova read a report presenting data on the

mechanism of cytochemical changes in the motoneurons of the spinal cord with reflex excitation. It was established that an increase in RNK localized in the Nissl bodies and nuclei of nerve cells is related with decay of ribonucleoproteins, while the accumulation of phosphatase depends upon the splitting of phosphorus-containing energetic substances.

Other reports (from the laboratory of A. B. Kogan) disclosed the mechanisms of intercentral inter-relationships in the formation and action of conditioned reflexes, in the development of convulsive seizures and compensatory adjustments in the central nervous system, as well as in the autohemoperfusion of the cerebral vessels. According to G. M. Glumov and G. A. Khasabov, the spread of conditioned excitation and formation of the convulsive reaction is essentially effected along the transcortical pathways. L. A. Serebryakova and N. N. Tkachenko reported on the asymmetry of electrical activity of the spinal cord and cerebral cortex when a very satisfactory compensation of locomotor functions is reached following hemisection of the spinal cord.

Reports by Professor N. I. Lagutina and her collaborators (Sukhumi) were devoted to the study of the patterns of higher nervous activity in monkeys. N. I. Lagutina indicated that upon investigating the analyzers in monkeys special attention should be given to the biological role of stimuli and their adequacy. In producing alimentary conditioned reflexes an important role is played by the stimuli of the visual analyzer, while in protective reflexes the auditory stimuli gain the essential adequate significance. According to L. N. Norkina and P. S. Panina the orientation-investigative reflexes are especially sensitive indices of the functional state of the cerebral cortex of monkeys. T. G. Urmancheyeva read a report presenting electrophysiological data indicative of the considerable involvement of subcortical formations in the central mechanisms of conditioned reflexes.

A. D. Larionov (Stavropol'), R. R. Ovakimyan, N. I. Petrovskaya, M. F. Semynin, I. T. Lesnikov, Yu. D. Pevzner, K. K. Rozhkov (Rostov on the Don), V. K. Bondar', Ye. T. Zlenko, A. P. Mel'nikova (Dnepropetrovsk), A. M. Volynskiy (Simferopol') presented reports on the mechanisms of disturbance of activity of the cerebral cortex under the effect of various influences. The facts presented in these communications are of great significance to the theory and practice of medicine.

Twelve reports were read on the problem of hypothermia and thermoregulation. At the plenary session on "Controllable Heart Arrest as a Contemporary Medico-biological Problem," P. M. Starkov (Krasnodar), in a summarizing report, commented on the exceptional role of the heart in the recovery of a dead organism, and he presented data on some methods of increasing the resistance of the heart when its blood supply has stopped. Temporary total cardiac arrest, which is a necessity in performing major cardiac surgery, not only improves the conditions for the technical performance of the surgery, but at the same time improves the possibility of restoring its functions, particularly as compared with the simple exclusion of the heart from the circulation.

A comprehensive study of the automatism and accelerative function of the heart at low temperatures made it possible to utilize the cold factor in producing controllable cardiac arrest. The best result, as far as restoring cardiac function is concerned, was obtained by cooling the heart to a temperature of 9-12° by perfusing the coronary vessels with a cooled salt solution with a predominance of potassium ions. This method makes it possible to extend the period of exclusion of the heart from the circulation up to 40 minutes and more with subsequent total recovery of its accelerative ability. Certain specific questions in the problem of controllable cardiac arrest were presented in a report by Ye. A. Maligonov (Krasnodar).

Among the reports on hypothermia read at the sectional sessions, eight communications were devoted to questions of general and local cooling of the brain. When the cooling is effected through the external covering of the head /scalp/, the temperature drops in the entire organism, however the brain and the cortex in particular cool more, and this increases the brain's resistance to cessation of circulation and reduces the danger of hypothermia in the entire organism. A detailed experimental study of this method allowed L. I. Murskiy and his collaborators (Yaroslavl') to apply it in clinical practice in cases of major surgical procedures. K. N. Kiseleva (Krasnodar) showed that direct faradic excitability of the motor zone of the cerebral cortex of cats is preserved with local cooling down to 0°. At the same time, as was shown by G. G. Ivanichenko (Krasnodar), when the brain is cooled by perfusion of a cold solution through the lateral ventricles, the excitability drops more sharply. When the perfusing solution temperature is 25° the excitability is 51 percent of the initial figure, and when the temperature is 20° it is about 1 percent. Of great interest were the reports by A. P. Kostin and K. G. Sukhomlin (Krasnodar) showing the peculiarities of thermoregulation in large cattle under various ecological conditions.

Reports on the problem of "Anesthesiology" elucidated questions on the theory of narcosis and practical application of the latestest achievements in anesthesiology. N. I. Nikolayeva (Rostov on the Don) summarized extensive experimental data in her report. A study of the effect of "cortical" and "stem" narcotic substances upon the activity of the different sections of the central nervous system showed that both groups of substances at first decrease the excitability of the cerebral cortex. The change in excitability of the subcortical structures takes place later and is less pronounced.

A report by V. I. Linenko (Dnepropetrovsk) describes the dynamics of changes in bioelectrical activity of the cerebral cortex of dogs under the effect of hexenal; it was established that electroencephalographic changes in the visual zone occur earlier than in the auditory zone. G. Ye. Batrak and S. Ya. Dubich (Dnepropetrovsk) presented data indicating a drop in the resistance of young pups (ranging in age from one day to three

months) to ether following preliminary vagotomy. M. D. Gurdzhiyan (Krasnodar), using the thermoelectrical method of analyzing anesthesia compounds suggested by P. M. Starkov, determined the exact loss of ether through the skin as well as through the muscles, pleura and peritoneum during surgery.

Reports by K. I. Bender and S. L. Freydmann (Saratov) presented data on the effect of narcotic substances upon tissular respiration and other biochemical indices. Thiopental increases the oxygen demand and excretion of carbonic acid by the tissues of the heart and brain. Also the glycogen content in the cardiac muscle drops appreciably. Hexenal causes analogous changes in the cerebral tissues.

N. S. Dzhavadyan, N. G. Bannikova and V. V. Nikolayeva analyzed a method of producing electrosleep and electronarcosis with an "Electronarkosis" instrument which generates right angle impulses with a frequency of 110 gts /g-cycles/. Narcosis is produced most rapidly with the naso-pharyngeal method of applying the electrodes.

The physiology and pathology of blood coagulation were also discussed at the Conference. B. A. Kudryashov and his collaborators, G. V. Andreyenko, T. M. Kalishevskaya, G. G. Bazaz'yan and V. Ye. Pastorova presented data on the existence in the organism of a physiological anti-coagulative system of a reflex-humoral nature. When the function of this system is depressed any formation of thrombin may lead to the formation of thrombi and death of the organism due to general and local thrombosis. The nervous regulation of the process of blood coagulation was indicated in a report by M. A. Ykolova, Yu. N. Bordyushkov, L. Kh. Garkavi and Ye. B. Kvakina (Rostov on the Don) who had observed the pattern of increased thrombokinase activity and fibrinogen content upon stimulation of the hypothalamus.

V. P. Baluda and I. B. Tsynkalovskiy (Krasnodar) presented data on the presence of the following blood coagulative factors in the erythrocytes of healthy and sick individuals: antiheparin, thromboplastin, antifibrinolyzing and a factor similar to the plasmin factor I. These authors are of the opinion that when massive hemolysis of erythrocytes occurs under pathological conditions, these factors may participate in the process of coagulation.

Reports on questions of the pathology of blood coagulation were presented by M. S. Machabeli (Tbilisi), P. A. Tepper, A. A. Syurin (Simferopol'), P. M. Al'perin (Moscow) and others.

The pharmacotherapy of diseases of the coagulative system was represented in reports by I. E. Akopov and his collaborators, D. V. Pantyukhin (Krasnodar), G. V. Kochetkova (Samarkand). Some valuable data were presented in a report by I. E. Akopov in which he communicated his experience in investigating new hemostatic preparations. I. E. Akopov discovered the hemostatic property of the lagochilas intoxicans plant and suggested its

use in medical practice to stop hemorrhages. At the present time the lagochilus is widely used in the treatment of various forms of hemophilia. E. G. Khetagurova (Ordzhonikidze) presented data indicative of the reduction in thromboplastic activity of the blood in vitro under the influence of heparin.

Two sectional sessions were devoted to questions of the physiology of circulation and respiration. N. V. Danilov (Rostov on the Don) showed that the method of vein oncography that he used made it possible to determine the functional condition of the veins much sooner than the usual reading of venous blood pressure. G. Ya. Makevnin (Krasnodar) showed that the heart is a reflexogenic zone from which the effects on the motor apparatus of the spinal cord are produced. P. A. Nebykov (Krasnodar) demonstrated and analyzed the peripheral reflex from the abdominal vein on the heart of the frog. Communications by A. V. Mezher (Rostov on the Don) and N. S. Dzhavadyan (Moscow) shed a light on the role of the vegetative innervation of the heart with changes in electrolytic composition of the blood and the effect of innervation on rhythm upon electrical stimulation of the heart.

In the anatomical-physiological report by I. A. Kolomatskiy and Ye. A. Maligonov (Krasnodar) the functional role of muscular trabecula of the heart in the mechanism of cardiac contractions was demonstrated.

V. S. Rayevskiy (Moscow) showed that stimulation of a central section of the vagus nerve, on a background of apnea, elicited stimulation of the respiratory center, and on a background of rhythmic breathing -- inhibition. This same author in collaboration with V. V. Antipov, Ye. A. Kuanets and S. V. Tolova found that a resistance of 1--4 centimeters against water has a stimulating effect on the respiratory center. O. V. Benevskaya (Stavropol') reported that the periodic respiration of healthy premature infants is related with the function of the incompletely developed system of the respiratory center and with the effect of stimuli (cold, heat, etc.).

I. T. Lesnikov (Rostov on the Don) and V. V. Gnevushev (Stavropol') reported on the effect of deep breathing on physiological functions and on the role of full respiration as a form of active rest.

Significant space was devoted at the Conference to the discussion of the mechanism of effect of resort factors upon the organism. Scientists and practicing physicians from many cities participated in the discussion of this problem.

N. P. Pyatnitskiy, S. I. Kraynev and G. I. Kutakh, S. Ya. Kaplun and others presented reports concerning the mechanisms of action of hydrogen sulphide. It was shown that hydrogen sulphide baths have a complex effect on the organism. They can affect the reflex reaction which takes place with the participation of various levels of the central nervous system, and they can also alter the

activity of a number of ferments.

The mechanism of action of mineral springs on the gastrointestinal tract was discussed in several reports (A. K. Pislegin, Yu. K. Vasilenko, V. M. Deryabina and others). The mechanism of action of mud baths was also discussed (O. A. Karpovich, A. A. Yeremina).

New experimental and clinical methods were demonstrated at the Conference. Twenty-two demonstrations were performed.

10,657

CSO: 1873-S

-END-