"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 23280-66 EWT(1)/EWT(m) SOTH DD

ACC NR: AP6011437 SOURCE CODE: UR/0020/66/167/004/0925/0927

AUTHOR: Kozlov, V. A.; Saksonov, P. P.; Dobrov, N. N.; Antipov, V. V.; Parshin, V. S.

ORG: none

TITLE: Altered resistance of animals exposed to vibration to the action of some chemical preparations and physical load

SOURCE: AN SSSR. Doklady, v. 167, no. 4, 1966, 925-927

TOPIC TAGS: vibration, cystamine, strychnine, radiation protection, combined stress

ABSTRACT: Two series of experiments were conducted on 449 white mice weighing 20—24 g. In the first series, 240 mice were exposed to vibration (70 cps, 0.4 mm, 10 G, 1 hr exposure), after which they were given IP injections of cystamine chlorhydrate (400 mg/kg) or strychnine (1.5 mg/kg) 20 min or 4 hr later. These preparations were selected because they have a therapeutic effect for radiation sickness or injuries and may be used on prolonged spaceflights, should severe radiation conditions occur. It was established that the toxic action of these drugs was elevated in vibrated animals. In the control group, mortality was 45% for cystamine and 47% for strychnine. In the vibrated

Card 1/4 UDC: 629.198.61

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AP6011437

group, these values increased to 53.7% and 61.2% respectively, although a statistical examination of the data revealed that the difference was insignificant. This indicated that vibration affects the reactivity of the organism to these drugs. In the second series, the ability of control and vibrated animals to adapt to hexanol (100 mg/kg) was tested (65 mice). The preparation was IP injected after 15 min or 4 hr of vibration, as well as on a daily basis thereafter. Table 1 shows the re-

Table 1. Duration of the anesthetic effect of hexanol on control and vibrated mice (mean duration by group in min)

Experimental action	No. of mice	Days of hexanol injection				
		1st	2nd	3rd	4th	5th
Hexanol alone	31	115	50	29	31	32
15 min of vibration prior to 1st hexanol administration	18	106	32	28	22	80
4 hr of vibration prior to 1st hexanol administration	16	110	32	27	31	48

Card 2/4

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 22230-66

ACC NR: AP6011437

sults of this test. Three days after this test, the animals were given a toxic dose of strychnine (1.5 mg/kg) which was fatal for control mice in 50% of the cases. Mortality for animals which had been exposed to vibration 15 min or 4 hr prior to hexanol administration was 52% and 75%. For mice given hexanol alone, the mortality was 56%. The difference in mortality between these groups was found not to be statistically

Table 2. Swimming duration of control and experimental mice

Test no.	Experimental action	No. of mice	Swimming duration, min (M ± m)	Reliability		
				Rel. to test 1	Rel. to test 3	Rel. to test 4
1	Control	29	278±12,0	—	—	—
2	Vibration, no cystamine	29	272± 0,5	0,4	—	—
3	Cystamine, no vibration	28	145± 6,0	10,4	—	—
4	Vibration plus cystamine	28	115± 4,8	12,6	3,9	—
5	Cystamine plus vibration	30	103± 7,0	12,6	4,5	1,4

Card 3/4

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AP6011437

reliable. To test the effects of vibration and cystamine on the working ability of the organism, mice were exercised by swimming. Cystamine (225 mg/kg) was given either 15 min before or 15 min after vibration, whereupon the animals were placed in a tub of water (24±1C) until exhaustion occurred. Animals unable to swim for 1 hr were eliminated from this test. The results of this test are given in Table 2. These data show that vibration does not decrease working ability but that cystamine given before or after vibration does. Cystamine decreased the tolerance of the organism to exercise but statistically less so than when administered in combination with vibration. Orig. art. has: 2 tables.

[CD]

SUB CODE: 06/ SUBM DATE: 29May65/ ORIG REF: 006/ ATD PRESS: 4231

Card 4/4 UVR

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 40259-66 FSS-2/EWT(1)/SEC(k)-2 SCTB IT/DD/GW

ACC NR: AP6007747 SOURCE CODE: UR/0293/66/004/001/0156/0161

96
B

AUTHORS: Dolone, N. L.; Yegorov, B. B.; Antipov, V. V.

ORG: none

TITLE: The effect of factors of the space flight in the manned satellite "Voskhod" on Tradescantia paludosa microspores

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 1, 1966, 156-161

TOPIC TAGS: microspore, cosmonaut, artificial earth satellite, satellite data analysis, mitosis, microbiology/ Voskhod artificial earth satellite, Vostok 3 artificial earth satellite, Vostok 4 artificial earth satellite, Vostok 5 artificial earth satellite, Vostok 6 artificial earth satellite

ABSTRACT: The results of a study of the effect of the factors of the space flight of "Voskhod" on Tradescantia paludosa microspores are given. Stalks of Tradescantia paludosa with racemes were placed in special holders in the satellite. The anthers were fixed after planting 4 times: 2 hrs and 15 min, and 24, 48, and 120 hrs. The buds were also fixed 1.5 hrs before planting by cosmonaut B. B. Yegorov. Mitosis in the Tradescantia poludosa microspores lasted 7 days at 30C (interphase 5 days, early prophase 1 day, and all remaining phases 1 day) and the entire cycle lasted 10 days at 20C (interphase 7 days, early prophase 1.5 days, and all remaining phases another 24 hrs). It was found that the late and middle prophases were the most sensitive, and

Card 1/2

UDC: 581.057

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 4-2-66

ACC NR: AP6007747

that the early interphase was the least sensitive. This study confirmed the earlier hypothesis of N. L. Delone, V. F. Bykovskiy, V. V. Antipov, G. P. Parfenov, V. G. Vysotskiy, and N. A. Rudneva (Kosmich. issled., 2, No. 2, 320, 1964) that reorganization of the chromosomes is caused by one set of flight factors, while disruption of the mitosis mechanism is caused by another set of factors. Orig. art. has: 7 tables.

SUB CODE: 22, 06/ SUBM DATE: 02Sep65/ ORIG REF: 002

Card 2/2 mlr

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 37643-66 FSS-2/EWT(1)/EEC(k)-2/FCC/T SCTB TT/DD/JK/GW

ACC NR: AP6024650 SOURCE CODE: UR/0216/66/000/004/0592/0593

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. M.; Pekhov, A. P.; Rybakov, N. I.; Dobrov, N. N.; Antipov, V. V.; Kozlov, V. A.; Saksonov, P. P.; Podoplelov, I. I.

ORG: none

TITLE: Results of study of the effect of cosmic radiation and other spaceflight factors on lysogenic bacteria and human cell cultures [Paper presented at the Anniversary Symposium of the Institute of Biophysics of the Czechoslovak Academy of Sciences held in Brno in May 1965]

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 4, 1966, 592-593

TOPIC TAGS: spaceflight effect, radiation effect, Hela cell, lysogenic bacteria / Vostok 4 spacecraft, Vostok 6 spacecraft, Voskhod 1 spacecraft

ABSTRACT: Single-layer cultures of normal human cells (fibroblasts and amniotic cells) and human cancer cells (Hela strain), together with cultures of lysogenic bacteria (E. coli K-12), have been consistently used as radiation indicators on Soviet spacecraft. Results of these experiments have shown that repeated exposure of a culture of Hela cells to spaceflight factors on the Vostok-4 and Vostok-6 flights produced

Card 1/2 UDC: 629.195:577.391

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 37643-66

ACC NR: AP6024650

changes in experimental cells as compared with laboratory controls and with Hela cells exposed on one spaceflight only. A longer latent period of recovery of growth capacity and other characteristics [not named] were noted in twice-flown cultures. In addition, the coefficient of proliferation for Hela cells exposed on both Vostok-4 and Vostok-6 was one-half that for intact controls and for Hela cells exposed to spaceflight only once. These data suggest that spaceflight factors have a cumulative biological effect on human cell cultures. However, a direct dependence of biological effect on length of spaceflight exposure has not been established in experiments with the other radiation indicator, the lysogenic bacteria E. coli K-12 (λ). It is interesting to note that when the same Hela cells used on Vostok-4 and Vostok-6 were also exposed on Voskhod-1, a well-defined drop in the proliferation coefficient was observed in comparison with intact cultures. Experimental colonies were more compact, and there were more dead cells. Other reliable differences [not enumerated] were also found between intact controls and thrice-exposed cultures. However, no reliable differences could be detected between thrice-exposed Hela cells and a control strain used only on Vostok-6. It is suggested that the biological effect of spaceflight may be the result of the combined influence of radiation, vibration, and weightlessness. [JS]

SUB CODE: 06/ SUBM DATE: none/ ATD PRESS: 5146

Card 2/2 vmb

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 03[illegible]-67 FSS-2/EWT(1)/EWT(m)/ELC(k)-2/FCC SCIB TT/[illegible]

ACC NR: AP6028342 SOURCE CODE: UR/0293/66/004/004/0630/0633

87
86
B

AUTHOR: Volynkin, Yu. M.; Antipov, V. V.; Davydov, B. I.; Dobrov, N. N.; Nikitin, M. D.; Pisarenko, N. F.; Saksonov, P. P.

ORG: none

TITLE: Assurance of radiation safety during the Voskhod-1 and Voskhod-2 flights

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 4, 1966, 630-633

TOPIC TAGS: space radiation, ~~radiation safety~~ spacecraft, solar flare ~~prediction~~, radiation shielding, radiation dosimetry, nuclear emulsion, radiation ~~sensor~~ detector, EVA, lysogenic bacteria/Voskhod-1 spacecraft, Voskhod-2 spacecraft

ABSTRACT: The Voskhod-1 and Voskhod-2 flights were characterized by extremely high orbits (apogee 495 km). It was calculated that Voskhod-2 would have a far higher radiation exposure due largely to the proton component in the area of the Brazilian anomaly, where in the course of 20 min the spaceship would acquire about 80% of the daily dose. The extravehicular surface dose of electrons during 20 min could amount to 1 rad. In order to reduce this to zero a protective layer of 100 mg/cm^2 is required. Leonov's spacesuit fulfilled this shielding requirement. Since exposure to radiation may reach dangerous proportions during solar flares the following radiation protection measures were taken during the Voskhod-1 and Voskhod-2 flights. A preliminary study was made of radiation conditions on the proposed orbit. Forecasts

Card 1/3 UDC: 614.876(202)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AP6028342

of the possibility of solar flares were made. The radiation dose was reduced by spacecraft shielding. Changes in the level of radiation in the upper atmosphere were checked by means of ballon sondes. Integral doses and dose rates were measured by on-board radiation meters. Individual dosimeters of the ILK, IKS, and IFKN types and nuclear emulsions were used to measure the total doses acquired by each cosmonaut. Living organisms were carried on board as biodosimeters. Radioprotective drugs were carried for emergency use by the cosmonauts. In order to determine the effect of low-energy electrons during Leonov's EVA the two cosmonauts carried identical sets of dosimeters (on the chest under the spacesuit and in external hip pockets), which were capable of working in high-vacuum conditions. However, Leonov's dose did not exceed Belyayev's. Individual and on-board dosimeters indicated that the total dose received on Voskhod-2 was 70 ± 5 mrad, while that on Voskhod-1 was 30 ± 5 mrad. Analysis of the spectral composition of radiation made by nuclear emulsions indicated the presence of particles with linear energy losses comparable to ions of He, B, O, and Ar. The radiation dose, taking RBE into account, did not exceed several dozen ber. Biological objects carried on Voskhod-1 and Voskhod-2 showed increases in non-disjunction of chromosomes and increases in frequency of dominant lethal mutations in Drosophila, and disruption of the mitotic mechanism in microspores of Tradescantia; these increases, however, were small. Lysogenic bacteria carried on the two Voskhod flights did not show any effect of radiation or other spaceflight factors. Experiments performed by B. B. Yegorov have indicated that various stages of mitosis in Tradescantia microspores possess varying sensitivity to the effects of spaceflight factors. These findings confirmed Yegorov's hypothesis that the chief cause of

Card 2/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AP6028342

disruption of the mitotic mechanism is weightlessness and that chromosome reconstructions are due largely to combined factors related to spaceflight takeoff and reentry. Orig. art. has: 2 tables. [BM]

SUB CODE: 06/ SUBM DATE: 21Aug66/ ORIG REF: 006/ ATD PRESS: 5064

Card 3/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

EWT(1) SOTB DD/GD

ACC NR: AT6036477 SOURCE CODE: UR/0000/66/000/000/0030/0031

AUTHOR: Antipov, V. V.; Kozlov, V. A.; Davydov, B. I. Dobrov, N. N.; Razgovorov, B. L.; Saksonov, P. P.

ORG: none

31
B+1

TITLE: New data on changes in the reactivity of the organism under the effect of several spaceflight factors [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 30-31

TOPIC TAGS: space physiology, combined stress, biologic vibration effect, biologic acceleration effect, ionizing radiation biologic effect, rat, cystamine, strychnine, proton radiation biologic effect

ABSTRACT:

Experiments were performed to test changes in the reactivity of the organism which result from spaceflight factors (vibration, acceleration, ionizing radiation) and their combinations. The functional condition of the organism was evaluated using pharmacological and physical methods.

Card 1/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 00280-67
ACC NR: AT6036477

It was found that vibration (70 cps at 10 G, for 1 hr) did not affect the stamina of the animal to physical exercise (swimming). The administration of cystamine (225 mg/kg) either before or after vibration caused a marked decrease in the duration of the swimming by the animal. Cystamine alone decreased the stamina of the organism during exercise, but to a significantly smaller degree than in combination with vibration. Vibration had the effect of moderately increasing the sensitivity of the organism to cystamine (400 mg/kg) and strychnine (1.5 mg/kg).

Four hours after exposure to acceleration (8 G, chest-back, for 20 min), a statistically significant drop in the physical stability of the animals was observed. On the seventh day after exposure stability increased. Changes in the reactivity of centrifuged animals with respect to physical exercise corresponded to shifts in the ceruloplasmin in the blood.

Forty days after exposure to protons (energy 120 Mev, doses from 700--1770 rad), the stability of animals to physical loads was lowered. Preliminary centrifugation (8 G for 15 min four hours prior to irradiation with doses of 400 and 700 rad) increased somewhat the resistance of animals to radiation. [W. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT6036632

SOURCE CODE: UR/0000/66/000/000/0335/0336

AUTHOR: Saksonov, P. P.; Antipov, V. V.; Dobrov, N. N.; Koziov, V. A.; Shashkov, V. S.

ORG: none

TITLE: Problems of pharmacochemical protection of the organism against ionizing radiation on spaceflights [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 335-336

TOPIC TAGS: radiation protection, pharmacology, ionizing radiation biologic effect, cosmic radiation biologic effect, life support system, radiation tolerance, space medicine

ABSTRACT:

Although some pharmacochemical substances have a demonstrated ability to increase the radioresistance of both humans and animals, they cannot be used unconditionally in spaceflight. Special features of the cosmic radiation effect which must be considered in the search for effective

Card 1/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

radioprotective agents include: 1) the complex spectrum of cosmic radiation and its variable dose power (Protons of varying energies and undetermined RBE comprise 80% of cosmic radiation); and 2) alteration of the organism's reactivity to chemical substances, and to the combined effect of radiation and other spaceflight factors, such as acceleration, weightlessness, and altered pressure. Unfortunately, effective radioprotectors alter the organism's reactivity in such a way that it becomes less resistant to the effects of unfavorable flight factors, especially acceleration and vibration.

Before the problem of human pharmacochemical protection in spaceflight can be solved, a number of important studies must be conducted. First, the possibility of use of antiradiation agents during irradiation of biological objects with low, variable dose powers must be determined. Much more information about the effectiveness of such drugs under the combined influence of radiation and other spaceflight factors is necessary. Then it may be possible to eliminate the unfavorable effect of radioprotectors on the organism's tolerance to other spaceflight factors.

Radioprotective substances intended for use in spaceflight must offer good protection without altering the organism's resistance to other spaceflight factors, even after multiple administration. They must not hinder

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT6036632

work capacity even briefly, and also must be available in convenient medicinal form. In addition, radioprotectors used in spaceflight must not damage the hereditary structures or disrupt the physiological functions of links in the spacecraft life-support system.

[W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 03777-67 FSS-2/EWT(1)/EEC(k)-2/T [illegible]

ACC NR: AP6028343 SOURCE CODE: UR/0293/66/004/004/0634/0640

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. N.; Delone, N. L.; Rybakov, N. I.; Kozlov, V. A.; Davydov, B. I.; Antipov, V. V.; Saksonov, P. P.; Rybakova, K. D.; Tribulev, G. P.

ORG: none

TITLE: Biological investigations on the Voskhod-1 and Voskhod-2 spaceships

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 4, 1966, 634-640

TOPIC TAGS: biologic spaceflight, ~~effect~~, ~~lysogenic~~ bacteria, ~~radiation~~, ~~EVA~~, ~~radio-protective~~ drug, ~~β-mercaptopropylamine~~, spaceflight, ~~radio~~, ~~pine seed~~, wheat ~~seed~~/ Voskhod 1 spacecraft, Voskhod 2 spacecraft

ABSTRACT: Experiments were performed on the Voskhod-1 and Voskhod-2 spaceships to test the effects of spaceflight on lysogenic cultures of E. coli K-12 (λ). The cultures were carried in 1.5-ml ampules on board spaceships and in Leonov's spacesuit pocket during his EVA. Some of the ampules contained the radioprotective drug β-mercaptopropylamine. Controls were kept at the cosmodrome and at the home laboratory. Results showed that on the basis of viability there was no difference between samples carried on Voskhod-1 and the controls. Experiments on Voskhod-2 resulted in a slightly higher viability on the part of experimental cultures as compared to controls. Phage production of experimental cultures carried on the two flights also did

UDC: 629.198.621:576.8

Card 1/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

L 03777-67

ACC NR: AP6028343

not exceed phage production of controls. Thus, it was not possible to demonstrate the protective properties of β-mercaptopropylamine. An attempt was made to determine whether spaceflight sensitized lysogenic cultures of E. coli K-12 (λ) to consequent exposure to small doses of x-rays. Results showed that phage production in space-flown samples was almost identical to that of the controls. In addition, air-dried seeds of pine and winter wheat (PPG-186) were carried on Voskhod-2 and in Leonov's pocket during his EVA for the purpose of determining the genetic effects of space-flight factors. Results did not reveal any substantial differences between the two spaceflight-exposed groups of seeds and the controls. It is assumed that the absence of the effects of spaceflight factors on lysogenic bacteria and seeds of higher plants in these two flights is due to the particular conditions under which these flights took place. Orig. art. has: 5 tables. [BM]

SUB CODE: 06/ SUBM DATE: 21Apr66/ ORIG REF: 013/ OTH REF: 002/ ATD PRESS: 5063

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT6036563 SOURCE CODE: UR/0000/66/000/000/0172/0173

AUTHOR: Zhukov-Verezhnikov, N. N.; Mayskiy, I. N.; Tribulev, G. P.; Rybakov, N. I.; Podoplelov, I. I.; Dobrov, N. N.; Antipov, V. V.; Kozlov, V. A.; Saksonov, P. P.; Parfenov, G. P.; Sharyy, N. I.

ORG: none

TITLE: Some results and trends in the study of the biological effect of cosmic radiation and dynamic flight factors using microbiological and cytological models [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 172-173

TOPIC TAGS: manned space flight, space biologic experiment, tissue culture, lysogenic bacteria, cosmic radiation biologic effect, combined stress/Voskhod-1

ABSTRACT: Systems of lysogenic bacteria and single layer cultures of normal and cancer cells of man have been used on all spaceflights since the second orbital spaceship. This report presents the results of investigations performed on spaceships of the Vostok and Voskhod types. Biological experiments carried out on Vostok-3, -4, -5, and -6 indicate that phage production of lysogenic culture of E. coli K-12 increases with the duration of the flight. However, a direct linear relationship between the biological

Card 1/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT6036563

effect and the time of exposure in space was not established. The results obtained make it possible to assume that the biological effect in the above experiments depends on the combined effect of spaceflight factors, and specifically vibration, weightlessness, and radiation.

Ground experiments have indicated that the sensitivity of a lysogenic bacteria system to gamma irradiation (CO^{60}) increases if the bacteria were previously exposed to vibration. These results not only confirm this supposition but make a more differentiated approach to evaluation of various spaceflight factors possible. However, in order to obtain a more complete picture of the genetic and radiation hazard of such flights, it is necessary to consider data obtained with more highly organized biological objects. Consequently, the results of spaceflight experiments performed with single-layer cultures of somatic human cells are of definite interest. In the series of experiments carried out on Vostok-1, -2, and -4, it was found that viability, and such indices as the coefficient of proliferation, the percentage of dead cells, and the morphological, antigenic, and cultural properties of the tissues, did not differ substantially from controls which were kept at the cosmodrome or the laboratory.

Card 2/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT6036563

However, when tissues were subjected to a second spaceflight (on Vostok-4, Vostok-6, and Voskhod-1), the twice-flown tissues showed a definite prolongation in the latent period of the ability to grow, as well as certain other noticeable changes. This makes it possible to surmise that spaceflight factors may have a cumulative effect on human tissue cultures. Further investigations of the biological effects of spaceflight utilizing lysogenic bacteria and tissues of various cultures are contemplated. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06, 22 / SUBM DATE: 00May66

Card 3/3

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT7011642 SOURCE CODE: UR/0000/66/000/000/0001/0006

AUTHOR: Volynkin, Yu. M.; Antipov, V. V.; Davydov, B. I. Dobrov, N. N.; Nikitin, M. D.; Pisarenko, N. F.; Saksonov, P. P.

ORG: none

TITLE: Radiation safety during the flights of the Voskhod and Voskhod-2 spaceships

SOURCE: International Astronautical Congress. 17th, Madrid, 1966. Doklady. no. 4. 1966. Obespecheniye radiatsionnoy bezopasnosti pri poletakh korabley "Voskhod" i "Voskhod-2", 1-6

TOPIC TAGS: ionizing radiation biologic effect, proton radiation biologic effect, EVA, space physiology, space biologic experiment, space flight / Kosmos-47 space flight, Voskhod-1 space flight

ABSTRACT:

Radiation conditions on the Voskhod-1 trajectory were forecast using Kosmos-47, a satellite launched into the proposed orbit shortly before the manned spaceflight. A greater radiation hazard was predicted for

Card 1/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT7011642

the Voskhod-w spacecrew because of the higher orbit and extravehicular activity planned for this flight. Preliminary calculations set the maximum 24-hr dose at 0.1 rad, about 80% of which was expected to accumulate during 20 min spent passing through the region of the Brazilian anomaly. It was calculated that the EVA would expose Leonov to as much as 1 rad of electron radiation in a 20-min period, and that shielding of 100 mg cm^2 would be required to eliminate this hazard. Leonov's spacesuit fulfilled the shielding requirement. A total dose of no more than several dozen REM was anticipated for the Voskhod spacecrew for the 24-hr period.

The possibility of radiation injury from solar flare protons was carefully considered. Disruptions of the Earth's geomagnetic field after some solar flares are known to affect the "radiation screen" of the geomagnetic field. Thus, approximate total doses from large flares of the type 10 March 1959 and 12 November 1960 were calculated with different shielding thicknesses, discounting the screening effect of the Earth's magnetic field. (see Table 1)

Card 2/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AP7011642

Table 1

Energy of protons E, Mev	Shielding of air-equivalent substance, g/cm^2	Dose from flare, rad	
		Nov. 12, 1960	May 10, 1959
E > 40	1.5	550	1120
E > 80	5.0	90	70
E > 100	7.0	50	20
E > 200	24.0	10	1

As can be seen from the table, cosmonauts can receive radiation doses sufficient to disrupt working capacity or endanger life during a solar flare. Consequently, an important part of the radiation safety program consists of predicting potentially hazardous solar flares.

In addition to the measures just described, the Voskhod radiation safety system included measurements of radiation levels in the upper atmosphere using sounding balloons. In addition, a radiometer on the craft measured total dose and dose rate, each cosmonaut carried

Card 3/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT7011642

individual dosimeters (ILK, IKS, and IFKN types, and nuclear emulsions), and there were biological dosimeters on board. Chemical radioprotectors were available for emergency situations.

In order to determine the possible effect of electron radiation during the EVA, both cosmonauts wore an identical set of dosimeters equipped to work in a vacuum, one in the chest area under the suit, and one in the outside hip pocket.

Although the period before the Voskhod-1 launch was one of minimal solar activity, on October 9, 1964, (3 days before the launch) at 8:30 A. M. a 23-fold increase in radioactivity was noted in the upper atmosphere at an altitude of 22 km. The increased radioactivity lasted 2 hr and is still unexplained.

Doses obtained by Voskhod crew members are shown in Table 2.

Card 4/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

Table 2. Total radiation doses obtained by crew members on Voskhod-1 and Voskhod-2 spacecraft, in mrad (tissue)

Name of spacecraft	Individual dosimeters		R-ZAM on-board dosimeter	
	average dose for flight, mrad	average dose rate, mrad/day	dose for flight, mrad	dose rate, mrad/day
Voskhod-1	30±5	29±3	27±1	26±1
Voskhod-2	70±5	65±3	65±1	60±1

The total radiation dose received by Leonov was not higher than that obtained by Belyayev due to electron radiation outside the spacecraft, as had been expected. The fact that the absorbed tissue doses received by Voskhod-1 and Voskhod-2 cosmonauts were two and four times higher, respectively, than doses received on the Vostok flights can be explained by the difference in orbits and by some increase in the intensity of primary cosmic radiation characteristic for quiet Sun periods.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT7011642

The radiation doses for Voskhod crew members did not exceed several dozen REM each, as calculated. This radiation dose is not considered injurious to human health.

Biodosimeters carried on the Voskhod craft included seeds of higher plants, microorganisms, and fruit flies. In addition, Leonov had pine and wheat seeds and lysogenic bacteria in his hip pocket during the EVA. Analysis of this biological meterial showed that spaceflight factors had the following effects: mitosis was disrupted in Tradescantia paludosa microspores, and there were more dominant lethalities and cases of nonseparation of chromosomes in Drosophila. These shifts were of the same type as those observed in the Vostok-2, -3, and -6 experiments, and were also numerically insignificant. Lysogenic bacteria and plant seeds exposed in open space or kept in the spacecraft did not show the effects of spaceflight factors.

Yegorov's experiment with Tradescantia microspores demonstrated that the various mitotic phases of this organism have different sensitivities to spaceflight

Card 6/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AT7011642

factors. Furthermore, this experiment suggested that weightlessness may be the cause of disrupted mitosis in Tradescantia microspores, and that chromosome rearrangements are chiefly caused by factors associated with launch and descent.

Results of biological experiments conducted on the Voskhod spacecraft are in agreement with data from physical dosimeters. Periodic postflight examinations of all Voskhod crew members have also demonstrated the absence of a harmful radiation effect. Orig. art. has: 2 tables.

[ATD PRESS: 5098-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 006

Card 7/7

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV, V. Ye.

32357

TALIPOV, Sh. T. i ANTIPOV, V. Ye. Ob Otkrytii Malykh Kolichyestv Zn, Ni, Co, Cu, Cd, i Mi V Prisutstvii Bol'shkh Kolichyestv Khroma Doklady Akad. Nauk 1/3 CCP, 1949, № 9, 16-17 Ryezyumye Na Uzbyek. Yaz.--Bibliogr: s. 15

SO: Letopis' Zhurnal'nykh Statey, Vol. 44

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV, V. K.

(3)

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Inorganic Chemistry

New method of synthesis of chromium fluoride. Sh. T. Talipov and V. K. Antipov (Inst. Chem., Acad. Sci. Uzbek. S.S.R.). *Doklady Akad. Nauk Uzbek. S.S.R.* 1951, No. 12, 27-9(in Russian).—Pure CrO_3 (40 g.), 240 g. 10% HF, 17 g. glucose, and 30 ml. EtOH, added in that order with agitation, until a spot test on filter paper shows green edges, gave $CrF_3.3H_2O$ in the soln. The latter was concd. on a steam bath to a paste, stirred with 50 ml. warm H_2O, kept overnight, filtered through a Pt Büchner funnel, washed with EtOH and cold H_2O, yielding 85-90% of product after 2 recrystns. Purity of 99.60% was established by analysis.
G. M. Kosolapoff

7-27-5

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

TALIPOV, Sh.T.; ANTIPOV, V.Ye.

Investigation of solubility in the system chromium fluoride-sodium fluoride-water at 30°. Trudy Inst. Khim., Akad. Nauk Uzbek. S.S.R. 3, 206-13 '52. (MLRA 6:3)
(CA 47 no.22:11930 '53)

1. Uzbek Acad. Sci., Tashkent.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

TALIPOV, Sh.T.; ANTIPOV, V.Ye.

Separation of large quantities of chromium from small quantities of zinc, copper, nickel, cobalt, and cadmium. Trudy Inst. Khim., Akad. Nauk Uzbek. S.S.R., Inst. Khim. 3, 214-22 '52. (MLRA 6:3)
(CA 47 no.22:12106 '53)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

TALIPOV, Sh.T.; ANTIPOV, V.Ye.

Investigation of solubility in the system aluminum fluoride-lithium fluoride-water at 25°. Trudy Inst. Khim., Akad. Nauk Uzbek. S.S.R. Inst. Khim. 3, 223-9 '52. (MLRA 6:3)
(CA 47 no.22:11929 '53)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AM6029197 Monograph UR/

Ass, Boris Abramovich; Zhukova, Nina Mikhaylovna; Antipov, Yevgeniy Fedorovich

Parts and units of aviation instruments and their design (Detali i uzly aviatsionnykh priborov i ikh raschet) 2d ed., rev. and enl. Moscow, Izd-vo "Mashinostroyeniye", 1966. 415 p. illus., biblio., tables. Textbook for students at aviation engineering technical schools. 15,000 copies printed.

TOPIC TAGS: auxiliary aircraft equipment, aircraft engine instrument, aircraft flight instrument, shock absorber, gyroscope

PURPOSE AND COVERAGE: The book is intended as a textbook for students of aircraft building technical schools and the aircraft instrumentation industry staff. Detailed information is presented on theory and design in the field of aircraft instrumentation and accessories such as sensor elements, mechanical transmitters, and amplifying mechanisms, components of gyroscopic instrumentation, current-carrying and computing equipment, shock absorbers, damping mechanisms, and bearings. Drawings and illustrations appear throughout the text, and formulas are given for solving various problems in the field. A brief review is given in the introduction of known contributors to the development of the Soviet aircraft instrumentation industry. Review and suggestions regarding the manuscript of this book were provided by Doctor of Technical Sciences D. A. Braslavskiy and Engineer A. A. Nikolayeva. There are 66 references, 65 of which are Soviet.

Card 1/2 UDC: 629.13.05(075)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ACC NR: AM6029197

TABLE OF CONTENTS (Abridged):

Introduction -- 3

Ch. I. General information on aircraft instrumentation and its operational requirements -- 5
Ch. II. Sensor elements -- 14
Ch. III. Instrument transmission mechanisms -- 250
Ch. IV. Bearings -- 297
Ch. V. Damping devices and shock absorbers -- 340
Ch. VI. Gyromotors -- 371
Ch. VII. Current transmitting systems -- 383
Ch. VIII. Reading adapters and housings -- 399

Appendix -- 407

References -- 411

SUB CODE: 01/ SUBM DATE: 26Feb66/ ORIG REF: 065/ OTH REF: 001/

Card 2/2

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BORMOTOV, P.N., inzh.; GRISHIN, S.S.; ANTIPOV, Yu.; VITRIK, E.V., inzh.; KOSAREV, P.S.; NEKHOROSHEV, A.I.; RYABTSEV, G.I.; KOTOV, S.F.; SHAMAGIN, M.A., gornospasatel' (Komi ASSR, g. Ukhta)

On P.M. Solvev'ev's article "Improve the design of the SP-55M self-rescuers." Bezop.truda v prom. 6 no.7:9-11 Jl '62. (MIRA 15:7)

1. Tekhnicheskoye upravleniye Kombinata ugol'nykh predpriyatiy Kuznetskogo kamennougol'nogo basseyna (for Bormotov). 2. Master shakhty im. Lenina Makeyevskogo tresta ugol'noy promyshlennosti Donbassa (for Grishin). 3. Komandir vzvoda voyenizirovannoy gornospasatel'noy chasti, pos.Zarubino, Novgorodskoy oblasti (for Antipov). 4. Shakhta No.24, Lubanskaya oblast' (for Vitrik). 5. Zaveduyushchiy gornymi rabotami Nikitovskogo dolomitnogo kombinata (for Kosarev). 6. Komandir otdeleniya No.8 VGSO, g. Shakhty, Rostovskaya obl. (for Nekhoroshev). 7. Komandir gornospasatel'nogo otdeleniya, g. Shakhtersk, Donetskaya obl. (for Ryabtsev). 8. Zamestitel' glavnogo inzh. shakhty No.29 "Kapital'naya" Chelyabinskogo kombinata ugol'nykh predpriyatiy Ministerstva ugol'noy promyshlennosti SSSR (for Kotov).
(Respirators) (Solovev, P.M.)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, F.N.

Soil colloids. F. N. Antipov Karataev and A. I. Rabinovich. *Proc. Leningrad Lab. Agro-Soil Inst. U.S.S.R.*, No. 10(1930).—A critical survey is given of recent work in the phys. and physicochem. properties of soil colloids.

B. C. A.

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

ANTIPOV-KARATAYEV, I.N.

The soils of the Crimean state forest sanctuary reservation and of the adjoining neighborhood. I. N. Antipov-Karatayev and L. I. Frasolov. Trans. Dokuchaev Soil Inst. (U. S. S. R.) No. 7, 280 pp.(1932).—A series of analyses—total, aq. exts. and base exchange—are presented on the mountain forest soils of Crimea, consisting of the brown forest soils and some "rendzina" at various stages of podsolization as evidenced by the replaceable H. The analyses of a no. of other soils—chernosem-like and terra rossa—are also given. I. S. Joffe

Vest. Dokuchayev Pochvov. Inst.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

15

Special and methodological investigations in the laboratory of analytical and colloid chemistry. I. N. ANTIPOV-KARATAEV. Lenin Agr. Sci. Acad., Inst. Fertilizers Agro-Soil Sci., Leningrad Branch (U. S. S. R.), *Bull.* 13, 148-59(1932).—A check-up on the Schollenberger method for detg. org. matter showed that a lower concn. of H_2SO_4 (1:1 of H_2O and H_2SO_4, or even less H_2SO_4) was more efficient in a 0.4 *N* chromic acid soln. A modification was also made of the Scebellidy (*Z. anorg. Chem.* 81, 1-4(1913)) method for detg. Fe^{++}. For the formation of the complex salt, which takes out the Fe, NH_4F and $K_2C_2O_4$ in the ratio of 5:1 by wt. were used. To avoid the difficulty in recognizing the I color methylene blue was used, which is colorless in a reduced condition. The titration with a standard I soln. was carried out as follows: to the test soln. add 12 cc. of 1:3 HCl and a few drops of methylene blue. Then add 5 g. of $KHCO_3$; when the soln. is satd. with CO_2 add the oxalate and fluoride. As the oxalate and fluoride dissolve, the blue color disappears and a yellowish color appears. Add the I soln. until an intense blue color appears, which, if it remains for 0.5 min., shows that the titration has been completed.

T. S. Joyce

Byul. Inst

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

Comparative investigation of the Kjeldahl and the Knop methods for the determination of the total nitrogen in soils. J. N. ANTIPOV-KARATAEV AND V. N. FILIPPOVA (Z. Pflanzenernähr. Düngung u. Bodenk. 24A, 334 (1932).—The Knop method was found to agree satisfactorily with the Kjeldahl method for the detn. of the total N in soils. The Knop method as a combined method for the detn. of the org. substances and humus by wet combustion and for the detn. of NH_3 by distn. from the neutralized chromic-sulfuric acid mixt. is sufficiently accurate for tech. analyses. R. M. B.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

15

Comparative investigations of different methods for the determination of the adsorption capacity of soils. I. N. Antipov-Karataev and L. A. Frolova. *Z. Pflanzenernähr. Düngung u. Bodenk.* A24, 357-69(1932).—The Bobko-Askinasi method and the modification suggested by di Gleria are considered the most accurate standard methods for the detn. of the adsorption capacity of carbonate-free soils. For the removal of the adsorbed Ba, a 0.05 *N* or weaker soln. of HNO_3 is recommended. The "universal method" of Gedroiz is considered the most accurate method for carbonate-contg. soils if due provisions are made for the accurate sepn. of $CaCO_3$ and $MgCO_3$ from Na_2CO_3.

R. M. Barnette

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

Ca

15

Reversal of charge on soils by acids and anion fixation. I. N. Antipov-Karatayev and A. I. Rabinerson. *Proc. 2nd Intern. Congr. Soil. Sci., Leningrad 1930 2*, 108-33 (1933) (in German).—The nature of the charge on the entire soil mass was detd. by electroosmosis expts. The reversal of charge on representative Russian soil types by common inorg. and org. acids was investigated. The most pronounced effects were observed with the 60-65 cm. horizon of a red earth (I); podzol soils were less affected. The charge on solonets and chernozem soils (II) was not reversed by acids. Most of the soils were affected by HCl and HNO_3, but only I by other acids. No connection with $SiO_2:R_2O_3$ in the fraction < 1 μ was noted, but there was marked correlation of charge reversal with the content of "mobile" R_2O_3, i. e., that extd. by oxalate or KOH. Charge reversal is attributed to a soln. effect; R_2O_3 is partially dissolved in the acid, then adsorbed upon particles, whence the latter become pos. The anion-fixing property does not closely parallel the ability to reverse charge; for sulfate and phosphate, it was strongly developed in soils not exhibiting the latter phenomenon. Nevertheless, both depend upon the content of active R_2O_3, the former also upon the soly. of salt-like combinations formed, buffering the soln. at an optimum not below p_H 2.2. Max. fixation of phosphate and sulfate was observed with I, min. with II. Fixation of nitrate was not observed; Cl^- was fixed by some soils irrespective of ability to reverse the charge, and with one podzol and II was neg. for the lower concns. of HCl. The max. was with I, likewise the only soil showing adsorption of carbonate from satd. CO_2 in H_2O. There are numerous references.

C. J. Schollenberger

ASM-SLA METALLURGICAL LITERATURE CL

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BC

#2

Soils of the Crimean National Forest. [illegible] A. M.

Vest. Dokuchayev Pochvoved. Inst.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

Application of electroditration, electrodialysis and electrolysis to soil analysis. I. I. N. Antipov-Karataev and K. N. Kraskov. *Trans. Dokuchaev Soil Inst.* 8, No. 8, 5-20(1933).—Adsorbed Ca and Mg are removed completely by electroditration, Mg being removed to a greater extent than by the acetate method. The amts of K and Na were 2-3 times those of the acetate method. This is due to the destruction of part of the soil mass. Electrodialysis gives results similar to those obtained by electroditration, whereas electrolysis gives results for Ca + Mg which are generally < those obtained by the acetate method.

R. C. A.

A10-11A METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

A-1

[illegible] is given as ±3%.

A. M.

Vest. Inst. Gedroiz

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

6C

A-1

Colorimetric picrate method for [determining] potassium. I. N. Antipov-Karataev and A. M. Miasnikova (Proc. Leningrad Dept. Inst. Fert., 1933, 17, 83—86).—The picrate method suggested by Caley (A., 1931, 482) was tested under varying conditions. Ppts. can be carried out at 12—15°; stirring for 10—15 min. after addition of reagent gives larger crystals which are best filtered through a plug of glass wool in an ordinary funnel. $Ca^{\cdot\cdot}$, $Mg^{\cdot\cdot}$, $Al^{\cdot\cdot\cdot}$, $Fe^{\cdot\cdot\cdot}$, P, and Si do not interfere, but if Na is > twice K the results are poor. A. M.

Vest. Inst

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BC

B-III-1

Reversal of soil charge by acids and adsorption of anions. I. N. Antipov-Karataiev and A. I. Rabinerson (Proc. Leningrad Dept. Inst. Fert., 1933, 17, 101—133).—The ease with which the electrical charge was reversed by acids (HCl, HNO_3, H_2SO_4, H_3PO_4, AcOH, $H_2C_2O_4$) was, in descending order, Chakva kremnozem, podsol, yellow podsol (Sochi), red clay (Crimea). Neither solonets nor chernozem had their charges reversed. Methylene-blue reversed the charges in all cases. There was no strong correlation between SiO_2/R_2O_3 ratio of the clay (< 1 μ) and the ease of charge reversal, but there is between the latter and the content of mobile R_2O_3 (Tamm's oxalate method and 5% KOH method of Gedroiš). The reversal of charge depends on the adsorption of anions, and the amount adsorbed in an acid medium depends on the amount of mobile R_2O_3 and the solubility of the salt-like compounds formed with the anions. A. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

BC

B-III-1

Adsorption of anions and calcium by soils. I. N. Antipov-Karataev, A. P. Vishniakov, and V. G. Sochevanov (Proc. Leningrad Dept. Gedroia Inst. Fert., 1933, 23, 1—34).—The character of the adsorption curves of anions and the shows the dependence of this adsorption on the pH of the medium, and the degree to which the adsorbents (I) are amphoteric. The apparent negative adsorption of anions is due to the different degree of hydration of (I), the hygroscopic H_2O not being displaced in equal amounts by all solutions. A. M.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BC

B-3-1

RECENT RESEARCH ON SOIL CHEMISTRY IN THE U.S.S.R.

I. N. Antipov-Karataiev (Pedology, 1934, 29, 167--179). Pochvovedi,

A summary of published and upbublished work.

A. M.

AIO-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES

RA

15

Vest. Dokuchayev Pochvoved. Inst

Adsorption of potassium by soils. I. N. Antipov-Karataev and T. P. Antipova-Karataeva. *Dokuchaev Soil Inst., Studies in the Genesis and Geography of Soils* 1938, 171-88(in English). The adsorption of electrolytes by soils was studied (1) by detg. the amt. of solvent adsorbed and using this value to correct the analytical data on the equil. soln. and (2) by direct detn. of the amt. of cations adsorbed. The following soils were studied: Voronezh chernozem, kaolin saturd. with Ca, chernozem saturd. with Na and a podzol (Viatka kaum). The common method of detg. adsorption by taking the difference between the initial and equil. concns. of electrolyte leads to an apparent anomalous adsorption in KCl concns. as low as 0.1 *N*. This is due mainly to a partial adsorption of the solvent. An attempt to det. the amt. of solvent adsorbed by using a sugar soln. and detg. the concn. of sugar initially and at equil. failed owing to "combination" of the sugar and soil in the presence of electrolytes. The direct method of measuring adsorption by analytical detn. of the amt. of cation adsorbed gave results that agree with the Freundlich adsorption isotherm at all KCl concns. up to 0.8 *N*. The law of mass action, even when using activities instead of concns., can be applied only at concentrations below 0.1 *N*. Thirty-nine references. Colin W. Whittaker

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

15

An investigation of humate-forming processes by means of electrochemical methods. I. N. Antipov-Karataev and I. A. Khainskii. *Dokuchaev Soil Inst., Studies in the Genesis and Geography of Soils* 1935, 187-211 (in English).—The objects of this investigation were: (1) a qual. sctn. of the equivalence of replacement of H ions by other cations when humates are formed and the discovery of whether this process is an exchange adsorption or a chem. reaction leading to total or partial replacement of carboxylic H in a mol. of humic acid, (2) the establishment of a quant. relation between the degree of dispersion of the humates and the nature of the combined cations, (3) the investigation of the chem. nature of humic acid, its basicity and chem. equiv., and the degree of dispersion of humic acid and of humates. Two humic acids were obtained, sol no. 1 from *Hypnum sedge* peat near Minsk and sol no. 2, from young sedge peat near Leningrad, both by satn. with neutral salts after previous washing with 1% HCl to a neg. reaction for iron. The prepns. were purified by simple dialysis and then by electrodialysis until a const. cond. of the soln. was obtained. Preliminary cond. measurements having shown that the reaction between a sol of humic acid and a base reaches equil. in 9-10 days, the following method was adopted. Ten cc. of humic acid sol was put into each of a series of volumetric flasks and gradually increasing vols. of a soln. of the base were added. Distd. H_2O was added to make the vol. up to 100 cc. Cond., p_H and dispersion detns. were made after the solns. had stood for 14 days. These cond. measurements were thus a form of titration. The bases studied were LiOH, NaOH, KOH, $Ca(OH)_2$, $Ba(OH)_2$, $LiCO_3$ and $MgCO_3$; all but the last named were 0.01 *N* and it was 0.002 *N*. All titration curves show the "jump" p_H at about the same point with either alkali or alk. earth hydroxides. When titrating with alkalies a molecularly dispersed system of the humate is obtained at the moment of neutralization, the percentage of the mol. fraction (particles less than 20 μμ in diam.) is nearly 100. A mol. exchange reaction, consisting of replacement by metals of all the carboxylic H of humic acid, takes place in alk. humate formation. Titration with the alk. earth hydroxides leads, on the other hand, to coagulation of more than 90% of the total humic acid at the neutral point yet the equivalence observed indicates the formation of humic acid salts of a definite degree of displacement. The shape of the acid portion of the titration curves depends on the degree of hydration of the humates formed which in turn depends on the degree of hydration of the cations. In the alk. zone equivalence of replacement is shown by the alkali cations but Ba and Ca hydroxides show some divergence. Analogous results were obtained for the titration of sol no. 1 with Li and Mg carbonates except that the "jump" occurs at lower p_H values owing to the greater buffer action of

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

the carbonates. In view of the known quadrivalence of humic acid it is suggested that the existence of only one "jump" on the titration curve may be explained (1) on the assumption that the "jump" corresponds to the total replacement of the first H of humic acid, the dissocn. consts. of the other hydrogens being so small that the resp. curve breaks are located at p_H values too high to be detected by rept. or (2) the 4 dissocn. consts. are nearly equal as in some other org. acids. Calcns. showed the activity of the humic acid H ions to be 1.09×10^{-4} for sol no. 1 and 1.88×10^{-4} for sol no. 2. The equiv. wt. of the humic acid, taken as equal to 4 times the amt. of dry matter present per l. over the g. equivs. of H present, was found to be 320 and 321, resp., which agrees well with values in the literature. This indicates that the 4 H ions have equal dissocn. consts. Cond. measurements were made at 20° on the same sols to which varying amts. of bases had been added and allowed to stand 14 days; the Kohlrausch app. as modified by Prunin was used. Values for H-ion activity in good agreement with those obtained from the potentiometric measurements were obtained. The degree of dissocn. of humic acid calcd. from the H-ion activity and the concn. of titrated H indicates that it is a weak acid. The conductometric data show that, in the acid zone, alk. earth ions are completely replaced by H. Na and Ca humates showed little or no hydrolysis below the neutral point but the hydrolysis of alkali humates is quite large even in the acid zone. The equiv. wt. of humic acid calcd. from the position of the bend in the cond. curve varies from 318 to 330. The same soln. were used for dispersion measurements (the ultrafilter system of Moskov was used). Peptization by alkali hydroxides and coagulation by alk. earth hydroxides terminate at the neutral point. The sols coagulate most intensely in the early stages of titration, i. e., when the acid humates are being formed. Peptization curves, however, show a max. near the neutralization point. C. W. W.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

Physicochemical properties of soils as a function of composition and the relative exchange of cations. I

I. N. Antipov-Karataev, T. F. Antipova-Karataeva and A. N. Vasilevskii. *Colloid J.* (U. S. S. R.) 1, 257-88 (1935). Data are given for heats of melting and hydration, sp. gravities, acidities, elec. conductivities, degree of assocn. of colloidal complexes, cataphoretic velocity, mech. aggregation, relative dispersion, swelling and rate of drainage of various U. S. S. R. soils satd. by solns. of various ions. II. **Filtering capacities of soils saturated by various ions.** *Ibid.* 333-57. Rates of sorption and desorption of various ions and of water by soils satd. by various ions are detd. F. H. Rathmann

Koll-Zhur.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

BC

15-III-1

[illegible] of soils on [illegible] of [illegible] amount of [illegible]. II. I. N. Antipov-Karataiev, T. F. Antipova-Karataieva, and A. N. Jasinovski [illegible] A., 1937, I, [illegible] in the series H soil > Ca > [illegible] > Mg > K > Na, Li soil for chernozem, and in the series H, Ba > Ca > Mg > K > Na, Li soil for clay soils. Adsorption of H_2O from streaming vapour varies in the series Li > Ca > Mg, H > Ba > Na, K soil for chernozem and Li > Ca, Na > H > Mg > K soil for clay soils. J. J. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BC

a-1

Technique of measuring adsorption of potassium by soils. I. N. ANTIPOV-KARATAIEV and T. F. ANTIPOVA-KARATAIEVA (Kolloid. Zhurn., 1936, 1, 481—494).—Calculation of H_2O adsorbed by soils by measuring the negative adsorption of sugar from its aq. solution is impossible in presence of electrolytes as sugar is adsorbed relatively more strongly than H_2O. The adsorption of KCl can be measured only by analysing the soil before and after the adsorption. Data are recorded and discussed.

J. J. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BC

8-III-1

Soil formation on the Caucasian Black Sea coast. [illegible] I. N. Antipov-Karataev, and V. N. [illegible] (Leningr. Acad. Agric. Sci. Ged. Inst. Pert. [illegible]; Proc. Internat. Soc. Soil Sci., 1935, 10, 4).—The marked [illegible] characteristics of these yellow [illegible] to the presence of considerable [illegible] secondary Fe and Al silicates and of limonite [illegible]. The silicates are ppt. [illegible] than the corresponding humides and hence tend to accumulate near the soil surface.

A. C. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

Ca

15

The methods of investigating the mobile forms of potassium in podzolic, chestnut brown and chernozem soils. I. N. Antipov-Karataev, Yu. N. Klein, K. N. Krasikov and I. A. Khalinski. Trans. Dokuchaev Soil Inst. (U. S. S. R.) 12, [illegible] (in English 274-8) (1935).— Tests with [illegible] of soil types said, with K show that the replacement of K with HCl and HNO_3 follows the Freundlich [illegible] isotherm. No such [illegible] tion was found [illegible]. The method of detg. the [illegible] of replaceable K (by the Freundlich isotherm) is called the method of desorption. Soil samples (25 g. for chernozem and 50 g. for podzols) are treated with a vol. of acid 10 times the wt. of the soil, the strength of the acid being 0.05 to 0.4 N. The mixt. is shaken for 2 hrs., and the detns. of K, residual acidity, and Pa are made on different portions of the ext. More K is replaced by electrodialysis than by CH_3COONH_4 treatment. The voluminous data are presented in tables and graphs. I. S. Ioffe

Vest. Dokuchayev Pochvov. Inst.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

13

PROCESSES AND PROPERTIES INDEX

The desorption of cations from the soil. I. N. Antipov-Karataev and T. F. Antipova-Karataeva. *Chemisation Socialistic Agr.* (U. S. S. R.) No. 4, 46-66(1936).—A critical review of the literature on the role of the structure of adsorbents in the phenomena of adsorption and desorption of cations is given. The latest data on the structure of soil colloids in relation to the mobility of the exchange cations are analyzed. It is pointed out how the process of fixation of Mg and K represents a special group of reactions. By the NH_4-acetate method the desorption of Li, Na, K, Ca, Mg, Ba and Ca + Mg + Na satd. chernozem from the Volga region and loam from the Leningrad region was investigated. It is assumed from the data that in the chernozem because of the composition of its colloids—silicates with a high SiO_2:R_2O_3 ratio, the montmorillonite type—the free intramicellar [Wiegner's concept: Trans. 3rd Intern. Congr. Soil Sci., V. III (1936)] exchange reactions take place. In the loam the intramicellar reactions are also encountered in the loams and these are responsible for the fixation of Mg and K. It is brought out that the desorption reactions of various cations follow the laws of the hydration series, and of the valency of the cations. The Mg forms with the secondary amorphous silicates of the soil more stable silicates than the Ca and for that reason it does not follow the laws mentioned.

I. S. Ioffe

Khim. Sots.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

15

Irrigation of Lower Volga soils. I. K. Antipov-Karataev, V. N. Filippova and A. P. Sapelov. Trans. Irrig. Comm. Acad. Sci., U. S. S. R. 6, 5-66(1936).—Irrigation of isolated field [illegible] (1 × 4 × 2 m.) of chernozem, chestnut and [illegible] soils showed that up to 15,000 cu. m. of H_2O are required to free the surface 1 m. from sol. salts. Mg and Na are removed by gypsum, but large amts. of H_2O are required for complete interaction. Other Ca salts should be tried. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

15

Changes in solonetzicity of Lower Volga soils by chemical reclamation and irrigation. I. N. Antipov-Karatsev and V. N. Filippova. *Trans. Irrig. Comm. Acad. Sci. U. S. S. R.* 6, 67-136(1936).—Changes occurring in adsorbed bases, microaggregate analysis (cf. Vageler, C. A. 30, 6487[4]), filtration analysis and detn. of curve of H_2O suction proved most suitable for detg. the effect of amelioration. The action of CaO is slow; that of H_2SO_4 is rapid but may be harmful in absence of carbonate. CaO + S proved efficient in lab. capts. B. C. A.

The equivalent weight of clay acid of soil. Shigeru Osugi and Yamji Matsumura. *J. Sci. Soil Manure, Japan* 12, 1-12(1938).—The equiv. wt. of clay acid from soils of 4 kinds, detd. by potentiometric and conductometric titrations, ranged between 1500 and 2500. V. Kawashita

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

15

Mobile potash, phosphates and nitrogen in Lower Volga soils. L. N. Antipov-Karatsev and I. P. Serdobolskii. *Trans. Dokl. Comm. Acad. Sci., U. S. S. R.* 6, 137-73 (1950). K is carried into lower horizons as a result of chem. treatment. P_2O_5 behaves similarly, but chem. reclamation increases its mobility. Dil. HCl and NH_4Cl extn. showed good correlation with Neubauer's method for K. B. C. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

ca

15

The mountain forest and mountain meadow soils of the Teberda district, North Caucasus. I. N. Antipov-Karataev, T. P. Antipova-Karataeva and L. T. Kusakova. *Trans. Dokuchaev Soil Inst.* (U. S. S. R.) 13, 207-08 (in English 208-7) (1936).—Data are given on the humus content, N, P, K, and exchangeable bases of the following mountain soils: podzolic brown, forest brown, meadow and mountain meadow. It is noted that in the podzolic mountain soils there is an accumulation of total humus and very little removal of sol. humus. The degree of oxidation (the Springer method) is lower than in soils of the horizontal zonation. J. S. Joffe

ASB-ELA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, N.I.

Ca

15

Contributions from the Malousensk solonets field station report for 1935. I. N. Antipov-Karataev, N. I. Savvinov, V. N. Filippova, E. I. Kocherina, B. A. Pinnovskii, I. P. Serdobolskii and V. A. Solov'ev. *Trans. Comm. on Irrigation, Acad. Sci. U. S. S. R., Bull.* No. 9, 11-256(1937).—Extensive chem. and mineralogical data on the material and on the water ext. of the soil complex of the Transvolga region are presented graphically and in numerous tables. The variations in the chem. make-up, the extensive solonetz varieties found there and the effect of chem. treatment on the Na and Ca in the exchange complex and general compn. of soil, with reference to crop yields, are also given and discussed. I. S. Ioffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

BC

A-V

Genesis of colloidal metals in salt soils. Godrettsite, a new mineral. I. N. Anitrov-Karatayev and I. D. Shelekhov (Compt. rend. Acad. sci. U.R.S.S., 1957, 17, 251—254).—In order to ascertain the conditions resulting in the formation of colloidal minerals having a high alkali content, experiments on artificial mineral production were made. A gelatinous ppt. formed by mixing pure liquid glass dissolved in NaOH with $NaAlO_2$ was dried, and after 3 years was shown, by the Debye-Scherrer X-ray powder method, to have developed a complex cryst. structure. The substance is unchanged when heated to 1000°, and is regarded as a new mineral of high alkali content not removable by H_2O.

N. M. B.

DOM. AN SSSR

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

15

Pochvoved.

The chestnut brown soils of the arid steppe. L. I. Prasolov, I. N. Antipov-Karatsev and I. D. Sedletskii. Pedology (U. S. S. R.) 33, No. 6, 863-81 (in English 881-8) (1937). -Data on the chem. and mineral compn. of the normal and salinized chestnut brown soils are given.

J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

15

The physicochemical processes of solonetz formation
I. N. Antipov-Karataev and I. D. Sedletskii. *Pedology* (U.S.S.R.) 32, No. 6, 383-407 (1937).—Extensive data are presented on the compn. of a no. of soil profiles and of the colloid fractions. Total analyses, base-exchange capacity and type of cations, x-ray analyses of the colloid fraction, and mineral. analyses of these are given. The process of solonetz formation is extensively reviewed and discussed. It is pointed out that the increase of Mg in the exchange complex is not the cause of the solonetz properties, but the result. Soils contg. Na in quantities less than 5% of the total absorbed bases are not solonetzic; from 5-10% Na they are weakly solonetzic; from 10-20% Na they are solonetzic soils; and from 20% and more the soils are genuine solonetz. J. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES

The chestnut soils. L. I. Prasolov and I. N. Antipov-Karatsev. *Pochvy S. S. S. R., Akad. Nauk S. S. S. R., Pochvenny Inst. im. Dokuchaeva* 1, 261-98 (1939); *Khim. Referat. Zhur.* 1939, No. 10, 58-9.—In the chestnut soils the humus horizons are 30-80 cm. thick and of a dark chestnut color; the soils are low in humus, and weaker in macrostructure than the chernozem soils with a total structure coeff. of 64-74%; there is a considerable differentiation of the salt profile; owing to interaction of CO_2 with the hydrolysis products, primary silicates and carbonates of Ca and Mg accumulate. Absorption capacity is relatively high; satn. with Ca is 65-70% and with Mg 20-30% of capacity; content of absorbed Na is less than 5%; SiO_2/R_2O_3 is approx. 3.0. Montmorillonite and muscovite predominate in the clay minerals; total P_2O_5 is 0.06-0.15%, total K 1.2-2.3%, N 0.1-0.2% (C/N = 10-13), NH_3 15-60 mg./kg. The formation of the dark chestnut soils is regarded as a stage preceding the formation of the chernozem soils. This stage is characterized by the removal of the water-sol. salts with their accumulation in the lower part of the profile, the beginning of the hydrolysis of the primary minerals with the formation of alkali and alk. earth carbonates, a considerable humification with a simultaneous decompn. of the org. substances which cause the formation of the alkali and alk. earth carbonates accumulating in the limits of the soil profile and in the upper layers of the mother rocks.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

The velocity of equalization of the composition of exchange cations during the mixing of various horizons of soils. (Study of the theory and practice for the production of rich tillable layers of soils.) I. N. Antipov-Karatary and V. N. Filippova. *Pedology* (U. S. S. R.) 1939, No. 2, 42-9; *Khim. Referat. Zhur.* 1939, No. 11, 49. Several samples of soils and clays were said with various kinds of cations. Thin layers of these samples (which differed in their compn. of exchange cations) were sepd. from each other with cellophane, covered with water to the upper layer level and kept for 2 and 6 months. After these periods the compn. of the absorbed cations in the various layers was detd. The exchange Na was completely redistributed between the soils and clays during 2 months. The redistribution of the bivalent cations (Ca and Mg) was also practically complete after 2 months. These expts. were performed to solve the problem of increasing the tillable layer of the soil. A deep plowing of the podzol soils causes a mixing of the eluvial and illuvial horizons of the soil and, owing to the redistribution of the cations between the horizons, the degree of satn. increases. In such cases smaller doses of lime are required. In the solonetz soils the redistribution of absorbed Na causes a decrease of the solonetz properties; thus smaller addns. of gypsum are required.

W. R. Henn

Pochvoved.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

PROCESSES AND PROPERTIES INDEX

Saline marsh soils, solonetz soils and the improvement of solonetz soils. Iv. N. Antipov-Karataev. *Za Ustoj-chivyi Urozhai* 1939, No. 8, 35-40; *Khim. Referat. Zhur.* 1939, No. 12, 41.—Agrotech. methods are given for the addn. of gypsum to saline marsh and solonetz soils under conditions of irrigated and unirrigated agriculture.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

Cation exchanges in soils and in solutions of mixtures of neutral salts. [illegible] Antipova Karataeva and [illegible] Antipov Karataev. [illegible] (U.S.S.R.) 5, 419-39 (1939). Chemie & industrie 43, 254. A study of cation exchanges in chernozem soils for the systems Ca Mg, Na Ca, Ca (Mg + Na) and Mg (Ca + Na) shows that the corresponding adsorption reactions obey the law of mass action and that the exchanges are perfectly reversible and take place under conditions of strict equivalence. A. Panineau Couture

Koll. Zhur.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

The genesis of the illuvial horizons of solonetz. I. N. Antipov Karatayev. *Pedology* (U. S. S. R.) 1939, No. 7, 81 (in English, 91). A distinction is made between hardpan and clay pan, the former being cemented by silicate and carbonate ppts., the clay pans are the result of the dispersion of the colloids. I. S. Joffe

Pochvoved.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

The laws governing the interaction of clays and soils with electrolytes. I. N. Antipov-Karataev, S. P. Chistskii and V. A. Chernov. [illegible] The mass law equation was applied to the study of ion exchange in soils and clays by keeping const. the ionic concn. of the electrolytes. A linear relation between the pH and the magnitude of base exchange was established. Extensive data, in the form of tables and 2 graphs, are presented on the relation of the exchange [illegible] Mg, K, Na and stability of soil and clay suspension. The moisture relationships of the clays, sedimentation, filtration, suction force and drying properties as affected by electrolytes were extensively investigated. J. S. J.

Vest. Dokuchayev Pochvov. Inst.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

14

Chemical improvement of solonetz soils in U. S. S. R.

I. N. Antipov-Karataev. *Chemisation Sotsialist. Agr.* (U. S. S. R.) 1940, No. 1, 23-31; *Khim. Referat. Zhur.* 1940, No. 6, 61-2; cf. *C. A.* 35, 3751[1]; 36, 604[1].—Addn. of gypsum to the nonirrigated solonetz soils produces satisfactory results if the annual atm. ppta. is approx. 300 mm. or higher. Under irrigation, the effect of chem. treatment is obtained after 3-4 years. Data on crop yields of various plants and changes in the contents of exchange Na are given. W. R. Henn

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

15

Determination of exchange constants for the soil cations. T. F. Antipova-Karataeva and I. N. Antipov-Karataev. *Pedology* (U. S. S. R.) 1940, No. 2, 52-65 (in German, 66); cf. *C. A.* 34, 4200[8]. — The quant. laws governing adsorption of cations by soils are still to be established. This is especially true of mixts. of 2 or more salts. The theoretical interpretation is given of the exptl. material published earlier. In these expts. the exchange reactions between 2 and 3 cations in black soil were investigated. The condition of constancy of the ionic force of the solutions (J) was strictly adhered to in all expts. of a given series. The value of J = const. was always calcd. from the Lewis equation. Under these conditions the exchange adsorption reactions were shown to obey the law of mass action. They were also found to be reversible. For pairs of cations it was found: $X_1/X_2 = C_1K/C_2$, where C_1 and C_2 are the concn. of cations in equiv. solns., X_1, X_2 are the concn. of the adsorbed cations for the case where both of them are of the same valence. When valences are different: $X_1/\sqrt{X_2} = C_1K/\sqrt{C_2}$, for the case where one is univalent and the other is bivalent. When 3 ions are present, the value of K between them taken in pairs will be the same within 10-15% as if the 3rd cation were absent. Hence the exchange const. K is practically independent of the nature of ions other than the given pair, and of the value J of the solns. The av. values found are for black soil: $K_{Na/Ca} = 0.3830$; $K_{Na/Ca} = 0.0680$; $K_{Na/Mg} = 0.111$. Each one of these can be calcd. from the 2 others: $K_{Na/Ca} = K_{Na/Mg} \sqrt{K_{Mg/Ca}}$. The exptl. method is new and applies both to soils and clays. It permits preliminary quant. investigation of soil properties in respect to adsorption, for the purpose of amelioration measures, especially in saline and solonetz soils. The K values can be detd. from 3-4 "points" if J is const. If 3 cations are present, only two K values need be exptl. The exchange of any other cation can be studied in presence of a known pair, if the concn. of the former in the given soil is known. With the aid of the above expts. it was possible to establish the exact ratios Na/Ca and Na/(Ca + Mg) in the soil solns. at which the Na ions begin to penetrate into the colloidal complex of the soil (the potential saltiness of soil). Such quant. expts. are relatively more simple than the difficult empirical procedures used in the present-day practice of saline soil amelioration. The next problem is to establish accurately the amplitude of fluctuations in the above K values for various cations in different soils. Then it will be possible to calc. beforehand, on the basis of the compn. of soil solns. and of the chem. nature and concn. of each cation present in the soil, the best measures to be followed in practical and theoretical problems. 31 references.

C. S. Shapiro

Pochvovd.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

Application of different methods of peptization of clay for investigation of the mineralogical composition of its colloidal fractions. I. N. Antipov-Karataev, I. D. Sedletskii and S. M. Yusupova. *Colloid J.* (U. S. S. R.) 6, 133-44(1940).—The international method is compared with the method of fractional peptization (cf. Tyulin, C. A. 31, 6080). The second method could be used for the sepn. of amorphous and semicryst. compds. from the cryst. The 1st method sepd. the mixt. of minerals into groups of 2-3 minerals and, therefore, guaranteed completeness and accuracy of their detn. (the no. of lines on the roentgenogram never exceeded 10-15). A. A. P.

Kell. Chem.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

15

Ca

Recent work on soil colloids L. N. Antipov Karataev

Pochvoved. Pitkovo (U. S. S. R.) 1940, No. 7, 81-91 A review

C. S. Shapiro

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

11D

Exchange cations and mineral nutrition of plants. I. N. Antinin-Karataev. *Pedology* (U. S. S. R.) 1941, No. 1, 77 pp.—A review of the American literature on the subject. I. S. Ioffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

BA

15

The culture of sugar beets on soils of the solonetz complex. I. N. Antipov-Karataev. *Pedology* (U. S. S. R.), No. 2, 26-35 (in English, 35) (1942). —Data are presented on the compn. of chloride-sulfate and soda types of saline soils. It is pointed out that these soils can be improved for sugar-beet culture by deep plowing and incorporation of available org. matter. As a war emergency this type of improvement, without the aid of chem. agents, is possible. J. S. Joffe

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

17

The genesis of the colloidally dispersed soil minerals. I. N. Anjpov-Karatayev, G. M. Ponomarev and I. D. Sedletskiĭ. *Pedology* (U. S. S. R.) 1942, No. 3-4, 54-9(in English, 59-60). Using the x-ray method, the authors detd. the types of min. tals found in the fraction less than 0.2 μ. In the profile of a light-gray earth (gray soil of mundesert) on porphyry granite, to a depth of 60 cm. the following minerals were found: beidellite and muscovite-sericite. In a light chestnut brown soil on quartz porphyry, to a depth of 20 cm., the following were found; montmorillonite and muscovite-sericite. In a light chestnut brown on granite to a depth of 65 cm. the same minerals were found. In medium-rich humus chernozem on granite eluvium montmorillonite only was found in the first 10 cm. From this depth to 80 cm. the montmorillonite and muscovite-sericite were found. In degraded chernozem on porphyry-diorite, to a depth of 26 cm. the montmorillonite and muscovite-sericite minerals were found. J. S. Joffe

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

Methods of investigating the absorptive power of soils in line with the decision of the International Congress of Soil Science in Oxford, 1935. I. N. Antonov-Karataev and E. S. Firsova. *Pedology* (U. S. S. R.) 1942, No. 3-4, 90-102 (in English, 102). A report on the bases adopted, exchange capacity, and results of 7 soil samples distributed by the society to a no. of labs. The author detd. the exchange capacity of the soils by electrodialyzing and then treating them with a mixt. of $CaCl_2$ + Ca(OH)$_2$ of an ionic concn. = 0.05 (satd. CaO soln.). The quantity of Ca adsorbed was detd. potentiometrically. J. S. J.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, Ivan Nikolayevich

"On the Method of Determining the Absorption Capacity and the Structure of Exchanging Bases in the Carbonate Soils," Pochvoved., Nos. 9-10, 1942.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

The soil as a polydispersed system as developed in the U. S. S. R. for 25 years (1917-1942). I. N. Antipov-Karatayev. *Pedology* (U. S. S. R.) 1943, No. 6, 3-26 (in English, 26).—A. presents and analyzes critically the following angles of the subject: (1) the solid phase of the soil as a hetero- and polydispersed mass; (2) a total chem. analysis of the solid phase of the soil and its fundamental granulometric fractions; (3) a complete mineralogical analysis of the fundamental granulometric fractions of the soil, especially its highly dispersed fractions; (4) the solid phase of the soil and soil soln., their interaction in the light of: (a) electrokinetic phenomena and amphoteric behavior of soils; (b) the solid phase of the soil and water; (c) absorptive capacity of soils in relation to electrolytes and nonelectrolytes with the resulting acidity and solubility of soils; (5) the laws governing the dispersion of the soil mass: coagulation peptization, structure and thixotropy; (6) the solid and gaseous phases and their interaction; (7) the application of the studies of the soil as a polydispersed system to soil amelioration, *hydrotechnics, construction, ceramics* and war effort. J. S. J.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, I. N.

"Changes observed in the Disperaity of Soil Masses and Problems of their Practical Utilization," Pochvoved., No. 7, 1943

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

Methods of determining the absorptive capacity and composition of exchangeable ions in carbonate soils. I. N. Antipov-Karataev and N. I. Zaitseva. *Pedology* (U.S.S.R.) 1943, No. 9-10, 42-8 (English summary). The method adopted consists of taking 4 g. of soil satd. with Ba (0.5 *N* $BaCl_2$ and 0.01 *N* Ba acetate are used) and treating it with 80 cc. 0.05 *N* K_2CO_3, free from $KHCO_3$. The mixt. is allowed to stand for 2 to 4 hrs. and shaken occasionally. The suspension is allowed to settle for 40-48 hrs., or a filtrate obtained by passing it through a colloidal filter. To 20 cc. of the filtrate 10 cc. of 0.1 *N* H_2SO_4 is added. The CO_2 formed is driven off by boiling and the residual H_2SO_4 titrated with NaOH (0.05 *N*) with a mixt. of bromo cresol purple and bromothymol blue as the indicator. All soils gave good results, except for the chernozem or any other soil sample rich in org. matter. For these soils an alc. soln. of $MgSO_4$ (Sushko, *C.A.* 30, 4250[8]) is suggested. I. S. Joffe

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

Ca

Composition of colloid dispersion minerals and the metathetic capacity of glauconites from Saratov. I. N. Antipov-Karataev and I. D. Nedletskii. *Compt. rend. acad. sci. U. R. S. S.* 39, 116-17(1943).—X-ray patterns of glauconites before and after satn. by solns. of chlorides of H, Li, Mg, Na and Ba showed no structural changes; these samples are estd. to consist of 50% glauconite, 40% montmorillonite and 10% sericite. At pH = 9, the exchange capacity of one glauconite is 31.08 milliequiv. of M $BaCl_2$ per 100 g. material; a change of 1 pH unit changed its capacity by 4.0 milliequiv. The corresponding figures for permutite are 450 and 49 milliequivs.

Cyrus Feldman

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, I. N.

"The Struggle against Salting of Irrigated Soils," Pochvoved., No. 2, 1945

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

31

B

3351 Rykovodstvo Dlia Polevykh i Laboratornykh Issledovanii Pochv. Tom IV. Covremennye Metody Issledovaniia Fiziko-Khimicheskikh Cvoistv Pochv. (Handbook for Field and Laboratory Investigations of Soils. Vol. IV. Contemporary Methods of Investigating the Physico-Chemical Properties of Soils). Nos. 1-2. I. N. Antipov-Karataev, editor. 162 and 251 pages. 1945 and 1947. Moscow and Leningrad, U.S.S.R. (S593 An87x)

First volume (no. 1) contains 3 separate articles on methods for study of soils. Second volume (no. 2) likewise contains 7 articles on specific soil analysis and investigation methods. Graphs, tables, diagrams, and illustrations.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

The progress made and the problems of the chemistry of soils in the U.S.S.R. in connection with 30 years of the Soviet regime. I. N. Antipov-Karataev. *Pedology* (U.S.S.R.) 1947, (10)-6. - A review of the literature on the subjects of geochemistry, phys. chemistry, and chemistry of minerals in relation to soil problems. I. S. I.

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

The movement of copper in soils. I. N. Antipov-Karatsev. *Pedology* (U.S.S.R.) 1947, 643-9.—Cu^{++} is retained by soils and clays in two forms: exchangeable and chemisorbed (not exchangeable). Montmorillonite clays and soils high in org. matter tie up the Cu much more tightly than the Ca and Mg. In the case of non-montmorillonitic clays, the tightness of adsorption is reversed. It is suggested to use 0.5 N HNO3 for the extn of exchangeable Cu. The entire subject of adsorption and immobilization of Cu is reviewed, and a list of 20 references given. J. S. Joffe

U.S.S.R. METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

The brown forest and dark brown forest soils. I. N. Antipov-Karataev. *Pedology* (U.S.S.R.) 1947, 697-703.—On the basis of analyses of the brown soils in Crimea and their colloids, specifically the SiO_2, Al_2O_3 and SiO_2, Fe_2O_3, A. concludes that these soils have to be sepd. as an independent genetic type. J. S. Joffe

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAEV, I. N.

CA

15

Nature of the uptake of ions by clays and soils. III. Uptake of univalent and bivalent cations of chernozem soil and humic acid. I. N. Antipov-Karataev, G. M. Kader, and V. N. Filippova. *Kolloid. Zhur.* 9, 315-24(1947); cf. *ibid.* 8, 161(1946). Soil satd. with cation K_1 is shaken with a soln. of the chlorides of K_1 and K_2 in which the ratio $K_1:K_2$ is varied between 1.9 and 9.1. If the final concns. of K_1 and K_2 in the soln. are C_1 and C_2, and the amts. in the soil are X_1 and X_2, then $X_1C_2/X_2C_1 = k$ is the "equilibrium const." The uptake was reversible (i.e., identical values for k were obtained on either increasing or decreasing the ratio $K_1:K_2$) and k was independent of $K_1:K_2$ for the ions $K:NH_4$ ($k = 2.6$), Ca:Mg (4.3), and Ca:Ba (0.77), all on a chernozem 100 g. of which satd. 44.45 milliequiv. K_1. The uptake was almost reversible but k varied with $K_1:K_2$ for Ca:Mg on a Ca humate from peat, for K:Na and Ca:Pb on chernozem, and also for Ca:Cu on chernozem when the exchange occurred in an alk. soln. The uptake was irreversible for Ca:Hg, Ca:Cu in H_2O and Ca:Al (at pH 4.3-7) on chernozem, i.e., Hg, Cu, and Al could not be displaced by Ca. The ionic strength in all expts. was 0.0225 or 0.0250. The differences between humic acid, chernozem, and montmorillonite are discussed. **IV. Uptake of bivalent cations by red brown clays and some soils.** *Ibid.* 10, 73-82(1948). The uptake was reversible and the "equil. const." k was independent of $K_1:K_2$ for Ca:Mg on a red-brown clay (I) (whose satn. capacity $m = 35$ milliequiv. per 100 g.), a red soil ($m = 22$), and a podzol soil ($m = 12$), k being 1.5, 4.1, and 4.1, resp. The Cl concn. was 0.015 N in all cases. The uptake was reversible but k varied with $K_1:K_2$ for Ca:Pb and Ca:Hg, and the reversibility was poor for Ca:Cu in both aq. and alc. solns.; all on I. The greater the value of k, the greater is the selectivity of a soil. Bentonite clay is less selective than soils contg. kaolin and sericite. The uptake decreases in the series Pb > Ba > Ca > Mg for chernozem and Pb > Ca > Ba > Mg for montmorillonite clay. The variation of k with the ratio $K_1:K_2$ is a measure of heterogeneity of the adsorbent. Kaolin and humic acid are particularly heterogeneous. The (irreversible) uptake of Hg by chernozem is greater than by other soils, presumably because of the org. matter in chernozem. **V. Uptake of heavy metal ions by clays and soils in dynamic conditions.** I. N. Antipov-Karataev, M. A. Pasvik-Khlopina, M. S. Merkulova, and V. I. Grebenshchikova. *Ibid.* 401-5. Solns. of $HgCl_2$, $PbCl_2$, and $CuCl_2$ were filtered through a column 5 cm. wide of argillaceous soil, satd. with 10 mg. equiv. Ca per 100 g. at a rate of 1 cm./min. The heavy metal ions broke through after passage of 1 l. of soln. $V = kH$, i.e., H is the height of the column (10-40 cm.). For 0.002 N $HgCl_2$ and 0.000 N $PbCl_2$, the const. k was 277 and 1001 cm., resp. The const. k was almost identical for $HgCl_2$ and $PbCl_2$. $CuCl_2$ behaved like $PbCl_2$. Before the break through, the soil bound 1.1, 1.0, and 2.7 mg. equiv. Cu, Pb, or Hg from their 0.0005 N, 0.001 N, and 0.002 N solns., resp. The above equation was valid also for the filtration of Na_2AsO_4 and NaF through a red brown clay. I. I. Bikerman.

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

15

The battle against salinization caused by irrigation. I. N. Antipov-Karataev, V. A. Kovda, N. A. Kachinskii, N. S. Sobolev, and A. N. Kozanov. *Pochvovedenie* (Pedology) 1948, 123-41.—A discussion of methods used in preventing and combating salinization of different soils in the arid regions. J. S. Joffe

Pechsoled.

ASB SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, I. N.

USSR/Soil Science
Geography

Feb 48

"A Trip Into Bulgaria," I. P. Gerasimov, I. N. Antipov-Karatayev, 2½ pp

"Pochvoved" No 2

Describes desert, forest soils, soils of high altitude peat regions, and azonal or nonclimatic soils. Genetic types of soil in Bulgaria. Trip was of short duration; nevertheless, authors were able to obtain fair amount of data.

PA 62T101

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEVA, I. N.

USSR/Soil Science Mar/Apr 1948
Ions
Absorption

"The Nature of the Absorption of Ions by Clays and Soils: IV. Absorption of Bivalent Cations by Red-Boraz Clays and Certain Soils," I. N. Antipov-Karatayeva, G. M. Kader, V. N. Filippova, Soil Inst, Acad Sci USSR, Moscow, 10 pp

"Kolloid Zhur" Vol X, No 2

Describes replacement absorption of magnesium ions in Ca-clays, Ca-sub-ash soils and Ca-red clays, absorption of heavy metal ions on Ca-clay-covered surfaces, and results of the observations. Submitted 22 Mar 1947.

70T107

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, I. N.

PA 65/49T11

USSR/Chemistry - Ions Nov/Dec 48
Adsorption

"The Nature of Ion Absorption by Clays and Soils: V, Absorption of Heavy Metal Ions by Clays and Soils Under Dynamic Conditions," I. N. Antipov-Karatayev, M. A. Pasvik-Khlopina, M. S. Merkulova, V. I. Grebenshchikova, Soil Institute, and Radium Institute, Acad Sci USSR, 5 pp

"Kolloid Zhur" Vol X, No 6

Experiments show that the method of sorption filtration can be used for quantitative studies of interchange and adsorption processes in soils

[redacted]

65/49T11

USSR/Chemistry - Ions (Contd) Nov/Dec 48

under dynamic disequilibrium conditions, and that it facilitates establishing a quantitative relationship between the static absorption capacity and the dynamic activity of soils. Submitted 22 Mar 47.

[redacted]

65/49T11

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAEV, I.N.

ANTIPOV-KARATAEV, I.N.

24988 ANTIPOV-KARATAEV, I.N. Nekotoryye Voprosy Sovremennoy Khimii Pochv i Issledovaniye Pochvennykh Agregatov. Trudy Yubileynoy Sessii, Posvyashch. Stoletiyu So Dnya Rozhdeniya Dokuchayeva. M.-L., 1949, S. 185-93.

Spi Setopis 'NO 33, 1949

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

CA

Increasing the productivity of solonetz with irrigation under conditions of grass sod in the rotation. I. N. Antipov-Karataev, K. P. Pak, and V. N. Filippova. Sovet. Agron. 9, No. 2, 48-63(1951). A review of 15 years of investigations on ameliorating solonetz by means of gypsum, grass culture, and irrigation. It is shown that under certain conditions, especially in the presence of sulfates, it is not imperative to wash out the salts. J. S. Joffe

Pochvoved.

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATYEV, I.N.

Soil and land-improvement research in Tajikistan. Trudy TFAN SSSR 27:55-84 '51. (MLRA 6:8)

(Tajikistan--Soils) (Soils--Tajikistan)

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

ANTIPOV-KARATAYEV, I. N.: KRAYEVOY, S. YA.

Improving conditions for forest vegetation in Ergeni with the aim of successfully planting oak by the spot method.
Pochvovedenie no. 7, 1952.

SO: MLRA. September 1952;

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"

"APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1

AVAKYAN, A.B.; BUDYKO, M.I.; YUDIN, M.I.; OCHAKOVSKIY, Yu.Ye.; DAVYDOV, M.M.; ARMAND, D.L.; FEDOROVICH, B.A.; ZUBOV, N.N.; ANTIPOV-KARATAYEV, I.N.; SAPOZHNIKOVA, S.A.; ALISOV, B.P.; FOTEYEV, I.M.

Discussion of reports of the meeting. Vop.geog. 28:74-96 '52. (MLRA 7:5)

1. Gidroenergoproyekt Ministerstva elektrostantsiy (for Avakyan). 2. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova (for Budyko and Yudin). 3. Institut okeanologii Akademii nauk SSSR (for Ochakovskiy). 4. Gidroenergoproyekt Ministerstva elektrostantsiy (for Davydov). 5. Institut geografii Akademii nauk SSSR (for Armand, Fedorovich, and Foteyev). 6. Geograficheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Zubov and Alisov). 7. Pochvennyy institut im. V.V. Dokuchayeva Akademii nauk SSSR (for Antipov-Karatayev, I.N.). 8. Glavnaya geofizicheskaya observatoriya im. A.I.Voyeykova (for Saposhnikova).

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000101720009-1"