BAKHTEYEV, F.Kh.

"Popular and scientific Turkmen names of plants" by V.V.Nikitin, and B.B.Kerbabaev. Reviewed by F.Kh.Bakhteev. Bot. zhur. 48 no.7: 1065 Jl '63. (MIRA 16:9)

1. Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.
(Turkmenistan--Botany--Nomenclature)
(Nikitin, V.V.)
(Kerbabaev, B.B.)

BAKHTEYEV, F.Kh.

Present status of the problem of the origin of barley. Izv. AN SSSR. Ser. biol. no.5:655-667 S-O '64. (MIRA 17:9)

1. Botanicheskiy institut im. Komarova AN SSSR, Leningrad.

BAKHTEYEV, F.Kh.

Hordeum lagunculiforme S. Str. from the neolithic deposits of Switzerland. Bot. zhur. 50 no.4:541-54 Ap '65.
(MIRA 18:5)

1. Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.

VAVILOV, Nikolay Ivanovich, akademik; BAKHTEYEV, F.Kh., otv. red. toma; LIPSHITS, S.Yu., otv. red. toma

[Selected works in five volumes] Izbrannye trudy v piati tomakh. Moskva, Nauka. Vol.5. 1965. 786 p.
(MIRA 18:11)

BAKHTEYEV, F.Kh.

Experimental data on the nature of inheritance of some taxonomic characters in Hordeum spontaneum C. Koch emend. Bacht. Genetika no.2:152-157 Ag '65. (MIRA 18:10)

1. Institute of Botany, Academy of Sciences of the U.S.S.R., Leningrad.

BAKHTEYEV, F.Kh.; CHAVCHAVADZE, Ye.S.

Museum of the V.L. Komarov Botanical Institute of the Academy of Sciences of the U.S.S.R. Bot.zhur. 50 no.10:1486-1490 O '65.
(MIRA 18:12)

1. Botanicheskiy institut imeni Komarova AN SSSR, Leningrad.

COUNTRY : USSR
CATEGORY : Cultivated Plants. Cereals. Leguminous Crops. Oilseed Crops.
PER. PUB. : Referat. Zh., Biol., No. 1, 1959, No. 1013
AUTHOR : Bukhtoyev, F.T.
INST. : AS USSR
TITLE : Fossil Form of Cultivated Barley Hordeum Lagenaeuliforme Miohi.
ORIG. PUB. : Dokl. AN SSSR, 1956, 110, No.1, 103-105
ABSTRACT : A description of barley samples derived from archeologic excavations in the Crimea, Armenia and Azerbaijan is given; these samples are of interest in explaining the phylogeny and origin of tillage barley. After discovering bottle-shaped grains (H. lagenaeuliforme) amidst the rye-*, the author considers as proven the problem of the secondary origin of H. agriocrithon. -- Yu. L. Mazlov
*ail barley
CARD:

[redacted] :

[redacted] :

[redacted] : [redacted]., No. 1, 1959, pp. 10-11

[redacted] : ty 4,but they did not excell as far as the crops were concerned.The crop of winter varieties varies from 34 to 43 centners/hectare,of the multiple summer varieties it varies from 34-39 centners/hectare,and of the two series summer varieties it varies from 31 to 36 centners/hectare. -- [redacted]. Translation

CARD: 2/2

GAVRILOVA, V.N.; BAKHTEYEV, M.K.

Geology of some massifs of secondary quartzites in the Kounradskiy region (southwestern part of the Lake Balkhash region). Geol.rud. mestorozh. 7 no.4:26-33 Jl-Ag '65. (MIRA 18:8)

1. Moskovskiy geologorazvedochnyy institut im. Ordzhonikidze, Moskva.

BAKHTEYEV, M.K.; LIFSHITS, I.F.; POPOV, V.S.; STROGANOV, A.N.

Age of intrusive rocks in the southern part of the Tokrau synclinorium (central Kazakhstan). Vest. Mosk. un. Ser. 4: Geol. 20 no.4:39-46 Jl-Ag '65. (MIRA 18:9)

1. Kafedra istoricheskoy i regional'noy geologii Moskovskogo universiteta.

[illegible], [illegible] [illegible]V, [illegible]

Comparative characteristics of [illegible] volcanic complexes in the Western [illegible]. Biul. [illegible] 39 no.4:114-129 [illegible]
(MIRA 17:10)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103110017-7

MAKHTEYEV, N.G.

Mechanized feeding of lime to mortar mixers. Rats. i izobr. predl. v stroi. no.7:47-48 '58. (MIRA 11:12)

1.Trest Stalingradmetallurgstroy.
(Lime) (Mixing machinery)

RYSKIN, M.Ya.; TSVETKOV, I.T.; MITROFANOV, S.I., prof., rukovoditel' raboty; Prinimali uchastiye: BAKHTEYEV, N.Ye.; KOLOSOV, A.A.; SMOLYUK, L.P.

Combined filtration of fluxes and copper concentrate. TSvet. met. 36 no.12:76 D '63. (MIRA 17:2)

POLYAK, V.Ye., sanitarnyy vrach; BAKHTEYEVA, A.S., biolog

Mycological studies in barbershops. Gig.i san. 25 no.11:69 N '60.
(MIRA 14:1)

1. Iz Shchelkovskoy sanitarno-epidemiologicheskoy stantsii Moskovskoy oblasti.
(HAIRCUTTING—HYGIENIC ASPECTS) (DERMATOMYCOSIS)

SHVED, F.I.; KHAGIN, G.A.; DOLININ, D.P.; KARYAKIN, A.F.; VEKSLER, G.D.; BAKHTIAROV, N.F.

Crystallization and structure of an ingot made by vacuum arc melting. Stal' 24 no.9:809-812 S '64. (MIRA 17:10)

BAKHTIAROV, N.I.; LOGINOV, V.Ye.; POPOV, V.Ya., kand. tekhn. nauk, dots., retsenzent; UVAROVA, A.F., tekhn. red.

[Technological processes of the machining of precision pairs] Tekhnologiia obrabotki pretsizionnykh par. Moskva, Mashgiz, 1963. 286 p. (MIRA 16:8)

(Metal cutting)

USSR/ Electronics - Amplifiers

Card 1/1 : Pub. 89 - 25/28

Authors : Bakhtiyarov, P.

Title : The simplest audio amplifier for a string instrument

Periodical : Radio 1, page 57, Jan 1954

Abstract : A method for amplifying string instrument sounds is described. Diagram.

Institution: .....

Submitted: .....

AL'TOV, G.; BAKHTIAROV, R.

The oil well will live. Znan. sila 33 no.10:15-17 O '58. (MIRA 11:11)
(Oil wells--Repairing)

18.7520

AUTHOR: Bakhtiarov, R.A. (Moscow) SOV/180-59-5-11/37

TITLE: Dependence of the Size of Regions of Solid-Liquid State in Castings on the Position of the Alloy in the Phase Diagram

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 5, pp 70-76 (USSR)

ABSTRACT: Present opinion (Refs 1-7) holds that the greater the crystallization temperature range of an alloy, the larger the region in the cross-section of a casting in which crystallization proceeds. The author points out that this view fails to take into account the intensity of crystallization, i.e. the degree of completion of crystallization. The object of the present work was the theoretical determination of the influence of intensity of crystallization on the formation of transition (two-phase) regions in solidifying castings. The author considers first two alloys with the same temperatures of start and completion of crystallization, but one having the liquidus and solidus lines diverging and the other converging with falling temperature (Fig 1a): the "lever rule" shows that the main mass of solid phase precipitates

Card 1/3

Dependence of the Size of Regions of Solid-Liquid State in Castings on the Position of the Alloy in the Phase Diagram

at temperatures close to the liquid and the solidus, respectively. He next draws the solid-liquid regions for castings of the respective alloys, assuming that the part of the temperature distribution curve lying within the two-phase temperature range is straight, and discusses the solidification under different conditions. It appears that to obtain the same temperature gradient in castings of alloys with different crystallization intensities, different heat transfer conditions must deliberately be created. The author considers solidification of alloys with different thermal properties at equal rates of heat removal, showing that here the temperature gradient through the casting depends on crystallization intensity as well as on the width of the temperature range. He makes use of an approximate geometrical method to investigate the quantitative relation between transition-zone widths in castings of the two alloys, the main condition being that in castings having the same thermal properties the same quantity of metal will solidify in a given time.

SOV/180-59-5-11/37

Dependence of the Size of the Regions of Solid-Liquid State in Castings on the Position of the Alloy in the Phase Diagram

He shows the adequate accuracy of the method and uses it to determine the size of the solid-liquid zone in castings of alloys with a eutectic-type diagram (Fig 2). The author considers finally the application of his theoretical constructions of the transition regions for alloys of various compositions to the determination of size of solid-liquid state regions in castings in relation to the position of the alloy on a solid-solution and eutectic phase diagram (Fig 3). This shows that the inclusion of intensity of crystallization in the considerations gives an appreciably different value for the transition region depth.

Card 3/3

There are 3 figures and 7 references, of which 6 are Soviet and 1 is English.

ASSOCIATION: Institut tsvetnykh metallov (Moskva)
(Non-ferrous Metals Institute, (Moscow)

SUBMITTED: May 28, 1959

S/180/60/000/02/009/028
E111/E135

18.7520

AUTHOR: Bakhtiarov, R.A. (Moscow)

TITLE: The Size of Regions of Solid-Liquid State in Castings of Alloys of Different Composition

PERIODICAL: Izvestiya Akademii nauk SSSR,Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960,Nr 2, pp 56-62 (USSR)

ABSTRACT: The object of this work was to investigate how the size of the solid-liquid state zones in castings depends on the position of the alloy on the equilibrium diagram. The author discusses first, on the basis of published (Refs 1-7) work, the solidification of an alloy with a solid-solution type of diagram which gives a solid-liquid zone (Fig 1). The cooling curve which would be obtained with a thermocouple at the centre of the casting is shown in Fig 2 and the author notes that with high cooling rates such curves can be used to find the relation between the extent of the two-phase zone and the position of the alloy on the equilibrium diagram. Experimental work was carried out with Al-Cu, Al-Si and Al-Zn systems having solid-solution ranges and eutectics. Alloys were prepared from grade A00 aluminium,

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The Size of Regions of Solid-Liquid State in Castings of Alloys of Different Composition

grade Ts0 zinc, grade SIL-1 silumin and a 50/50 Al-Cu alloy. The alloy, heated to 850-950 °C, was poured into a vertical steel cylindrical ingot mould, heated to the same temperature, 20 mm in internal diameter, 30 mm high and 1.5 mm in wall thickness. After excess of liquid metal had been removed a chromel-alumel thermocouple of 0.5 mm diameter wires was immersed at the centre of the casting; the cooling curve was recorded on a EPP-09 potentiometer. Fig 3 shows cooling curves for the alloys with 2, 6, and 10% Si. Based on such curves "kinetic diagrams", as proposed by B.B. Gulyayev and O.N. Magnitskiy (Refs 3, 5 and 7) were constructed. These are shown, together with the relative width of the two-phase region, in Fig 4 which relates to the Al-Si alloys. In Fig 4b the top kinetic curves pass through points denoting the time for the two-phase region to reach the casting axis (represented by points B in Fig 3); the bottom curves correspond to time for complex solidification (points C in Fig 3);

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The Size of Regions of Solid-Liquid State in Castings of Alloys of Different Composition

time for complete solidification of primary crystals (points n in Fig 3) is represented by interrupted lines. For relating the size of the two-phase regions in castings to alloy position on the solid-solution type equilibrium diagram the author used Al-Zn: the kinetic diagram and width of the two-phase region are shown in Fig 5. For comparison, Fig 6 gives the kinetic diagram for Al-Si according to Gulyayev and Magnitskiy (Ref 3) and the corresponding width curve. The author concludes that this investigation has confirmed that from a cooling curve obtained with a single thermocouple at the heat centre of a casting the relative width of the two-phase region can be determined. The greatest such width is shown by alloys which in the equilibrium diagram lie closest to the eutectic or to the lower-melting solid-solution system component. The decisive influence on the two-phase zone width is exerted by the intensity of crystallization, an idea previously developed by the author (Ref 8).

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6954

S/180/60/000/02/009/028
E111/E135

The Size of Regions of Solid-Liquid State in Castings of Alloys of Different Composition

There are 6 figures and 9 references, of which 6 are Soviet, 2 English and 1 Czech.

SUBMITTED: October 13, 1959

Card 4/4

S/180/62/000/004/001/009
E193/E383

AUTHOR: Bakhtiarov, R.A. (Moscow)

TITLE: The relationship between the amount of shrinkage in castings and the deposition of the alloy in the constitution diagram

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no. 4, 1962, 62 - 69 + 2 plates

TEXT: Although it is generally accepted that the amount of shrinkage porosity in castings increases with increasing freezing range of the alloy, this belief is based on rather inconclusive evidence - hence the present investigation whose object was qualitatively to determine the amount of shrinkage porosity in chill-cast ingots, to study its distribution and to relate these properties to the freezing range of the alloys as determined by their position in the corresponding constitution diagrams. The experimental alloys included the hypereutectic alloys of the Al-Si and Al-Cu systems and the Al-Zn alloys (with up to 82.5% Zn) forming a series of solid solutions in the Al-Zn

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system. The alloys were chill-cast in thick-walled, cylindrical moulds, 50 mm in diameter and 125 mm high. The shape and dimensions of the primary pipes and the extent of the internal zone of shrinkage porosity were determined on longitudinal sections of the ingots. In addition, the volume of the primary pipes was measured directly from the volume of sand required to fill each pipe and the amount of internal shrinkage porosity in the affected zone was determined by measuring the density of samples cut from these zones and comparing it with the values obtained by the same method (hydrostatic weighing) for pore-free materials. Several conclusions were reached.
1) As, with increasing concentration of the second component, the freezing range of alloys of a given binary system increases, the width of the zone of shrinkage porosity in chill-cast ingots also increases. The maximum width of this zone, however, is found not in alloys characterized by the widest freezing range but in alloys which are situated near the eutectic or - in the case of a series of solid solutions - near the lower melting-point component. 2) The main factor determining the extent of

The relationship between ....

the pasty zone in a solidifying ingot is not the width of the freezing range of the alloy but the intensity, or rate, of crystallization. 3) The character of the relationship between the amount of shrinkage porosity in ingots of a given system and their position in the corresponding constitution diagram are also determined by the intensity of crystallization of these alloys. In eutectiferrous systems the maximum amount of shrinkage porosity is found in alloys whose composition is given by the point of intersection between the curve representing the temperature of the formation of a continuous crystal network (the broken lines in Figs. 3a and 6 showing, respectively, parts of the constitution diagrams of the Al-Cu and Al-Si systems) and the eutectic line. The greatest amount of shrinkage porosity, in the case of systems comprising a series of solid solutions, is found in ingots of alloys situated near the lower melting component in the composition range where the liquidus and solidus curves converge. There are 5 figures.

SUBMITTED: April 5, 1960

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The relationship between ....

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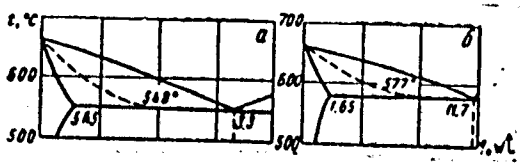
E193/E383

Fig. 3a:

Fig. 3b:



Card 4/4

BAKHTIAROV, R.I. (Moskva); KATZ, A.M. (Moskva)

Phase distribution in the solid-liquid region of castings. Izv. AN SSSR Met. i gor. delo no.2:117-123 Mr-Ap '64.
(MIRA 17:8)

BAKHTIAROV, S.

AUTHOR: Bakhtiarov, S., (Kazan') 25-58-3-16/41

TITLE: In the Name of Science (Vo imya nauki)

PERIODICAL: Nauka i Zhizn', 1958, Nr. 3, pp 37-39 (USSR)

ABSTRACT: A short biography of the Russian scientist, Academician A.Ye. Arbusov, head of the Kazanskiy filial-akademii nauk SSSR (Kazan' branch of the USSR Academy of Sciences) and of the Kazanskoye otdeleniye vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva (Kazan' department of the All-Union Chemical Society imeni D.I. Mendeleyev), and winner of several Lenin and Stalin prizes, is given.
There is one photo.

AVAILABLE: Library of Congress

Card 1/1 1. Biography

BAKHTIAROV, R.A.(Moskva); KATS, A.M.(Moskva)

Effect of alloy composition and the rate of cooling on the distribution of shrinkage cavities in castings. Izv. AN SSSR.Otd.tekh.nauk. Met. i topl. no.5:102-109 S-O'62, (MIRA 15:10)
(Nonferrous alloys—Analysis) (Metal castings—Defects)

BAKHTIAROV, Sh. Z., Cand Tech Sci -- (diss) "Research into parameters of working parts of cultivators for intertillage of the cotton plant." Tashkent, 1960. 23 pp with charts; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Inst of Mechanization and Electrification of Agriculture); 175 copies; price not given; (KL, 24-60, 132)

BAKHTIAROV, Sh.Z.

Some features of mechanized interrow tillage of cotton when interrows are narrow. Izv.AN Uz.SSR no.4:19-25 '56. (MIRA 14:5)
(Cotton growing)

BAKHTIAROV, Viktor Andreyevich; ANDREYANOV, V.G., otv. red.; SHATILINA, M.K., red.; SOLOVEYCHIK, A.A., tekhn. red.; BRAYNINA, M.I., tekhn. red.

[Water resources development and calculations] Vodnoe khoziaistvo i vodokhoziaistvennye raschety. Leningrad, Gidrometeor.izd-vo, 1961. 430 p. (MIRA 14:12)

(Water resources development)

BAKHTIAROV, V.A.

Concerning I.P.Sukharev's article "Experimental investigations of the transformation of maximum discharges of reservoirs and ponds." ("Meteorologia i gidrologia" No.12, 1961). Meteor. i gidrol. no.4:51-52 Ap '63. (MIRA 16:5)
(Ponds) (Reservoirs)

PANOVA, A.; MUSAYEVA, R.; BAKHTIAROV, Yo.

"Technology of artificial leather" by S.A.Pavlov and others. Reviewed by A.Panova, R.Musaeva, Y.Bakhtiarov. Kozh.-obuv. prom. no.10:34-35 O '59. (MIRA 13:2)
(Leather, Artificial) (Pavlov, S.A.)

YUSUPOV, B.M.; BAKHTIAROVA, M.G., red.; ZOLOTAREVA, I.Z., tekhn.red.

[Oil potentials of the Devonian in the eastern part of Tatarstan] Neftenosnost' devona Vostoka Tatarii, vol.4 153 p. (MIRA 17:3)

VLASOV, Pavel Vasil'yevich; KUDRYAVTSEV, D.S., kand. tekhn. nauk, retsenzent; TALYZIN, M.D., kand. tekhn. nauk, retsenzent; BAKHTIAROVA, M.G., red.; VINOGRADOVA, G.A., tekhn. red.

[Studying the possibility of applying radioactive radiation in the standardization of weaving processes] Issledovanie vozmozhnostei primeneniia radioaktivnogo izlucheniia pri normalizatsii protsessa tkachestva. Moskva, Gizlegprom, 1963. 150 p. (MIRA 17:3)

KAPUSTIN, Ivan Il'ich; MAKHLEVICH, Lev Yakovlevich; BAKHTIAROVA, M.G., red.

[New brands of steels and cast irons and their use in the machinery industry; a manual] Sovremennye sorta stalei i chugunov i ikh primenenie v mashinostroenii; uchebnoe posobie. Moskva, Gizlegprom, 1963. 42 p. (MIRA 18:3)

CHATSKIY, Petr [illegible]; BAKHTAROVA, M.G., red.

[Dressing of the hair covering; a textbook] Oblagorazhivanie volosianogo pokrova; uchebnoe posobie. Moskva, Legkaia industriia, 1964. 24 p. (MIRA 18:4)

[illegible] IMSHTIAROVA, N.G., red.

[New developments in the technology of wear-resistant sole leather] Novoe v tekhnologii iznosostoikikh podoshvennykh kozh. Moskva, Legkaia industriia, 1964. 27 p.
(MIRA 18:5)

BAKHTIAROVA, N.

Orchids. Vokrug sveta no.6:32 Je '54. (MLRA 7:6)
(Orchids)

BAKHTIAROVA, N.

Cold fire. Vokrug sveta no.10:33-34 O '55. (MLRA 9:1)
(Phosphorescence)

BAKHTIAROVA, N.

Silkworm. Vokrug sveta no.12:52-53 D '55. (MLRA 9:4)
(Silkworms)

LIFSHITS, I.D.; SHUVALOVA, L.S.; V rabote prinimala uch stiye; BAKHTIAROVA, Ye.P.

Artificial leather with a stitched nonwoven base. Kozh.-obuv. pr m. 2 no.8:24-26 Ag '60. (MIRA 13:9)
(Leather, Artificial)

BERNSHTEYN, M.Kh.; YABKO, Ya.M.; BAKHTIAROVA, Ye.R.; SHUVALOVA, L.S.; ZAYONCHKOVSKIY, A.D.; LIFSHITS, I.D.; GRINYUK, V.G.

Utilization of cotton manufacture wastes for the production of "IK" artificial leather. Kozh.-obuv. prom. 5 no.6:25-28 Je '63. (MIRA 16:6)

(Leather, Artificial)

BAKHTIGOZIN, I.A.

Effect of floods and April-May precipitation on the autumnal abundance of small murine rodents in the Volga-Akhtuba Flood Plain. Zool.zhur. 41 no.7:1075-1082 Jl '62. (MIRA 15:11)

1. Kharabali Branch of the Anti-Plague Station of Astrakhan.
(Volga-Akhtuba Flood Plain--Rodentia)

SMEKHUNOV, V.G., otvetstvennyy red.; BAKHTILINA, I.S., red.; SOKOLOV, D.P., red.; YERSHOV, P.R., red.; TROFIMOV, A.V., tekhn.red.

[Nomenclature and price list of materials and equipment used in the petroleum industry] Nomenklatura-tsennik materialov i oborudovaniia, primeniaemykh v neftianoi promyshlennosti. Moskva, Gos.nauchno-tekhn.izd-vo neft.i gorno-toplivnoi lit-ry. Pt.1. [Pipes, fittings, ferrous metals, quality steels] Truby, fitingi, chernye metally, stali kachestvennye. 1957. 355 p. (MIRA 11:1)

1. Russia (1923- U.S.S.R.) Ministerstvo neftyanoy promyshlennosti. (Petroleum industry--Equipment and supplies)

DOROFEYEV, A.; TSVETKOV, V., vrach; BAKHTIN, A.

Readers relate, advise and criticize. Sov. profsoiuzy 18 no.8:36-37 '62. (MIRA 15:4)

1. Predsedatel' rayonnogo komiteta professional'nogo soyuza zheleznodorozhnikov Velikolukskogo otdeleniya Oktyabr'skoy zheleznoy dorogi (for Dorofeyev). 2. Belokolodes'skaya uchastkovaya bol'nitsa, Orlovskaya oblast' (for TSvetkov). 3. Zaveduyushchiy klubom Suslongerskogo lesokombinata, Mariyskaya ASSR (for Bakhtin).

(Community centers)
(Orel Province--Agricultural workers--Diseases and hygiene)

KONOVALOV, I., doktor tekhn.nauk; PARFENOV, A.; BALANIN, V., kand.tekhn.-nauk; SHCHERBAKOVA, R., kand.tekhn.nauk; BAKHTIN, A.; BALIN, N.

Measures for preventing ice jams on the lesser and greater Northern Dvina. Rech. transp. 21 no.2:44-46 F '62. (MIRA 15:3)

1. Predsedatel' Kotlasskogo ispolnitel'nogo komiteta deputatov trudyashchikhsya (for Parfenov). 2. Nachal'nik Kotlasskogo tekhnicheskogo uchastka Severnogo basseynovogo upravleniya puti (for Bakhtin). 3. Glavnyy inspektor Kotlasskogo tekhnicheskogo uchastka (for Balin).

(Northern Dvina River--Ice on rivers, lakes, etc.)

MEDYANTSEV, A.N., kand. tekhn.nauk; KUKLIN, B.K., kand. tekhn. nauk; FILIMONOV, A.F., inzh.; BAKHTIN, A.F., inzh.; SHUSHKOV, A.M., inzh.; SINYUGIN, V.M., inzh.; CHERNYAYEV, V.I., inzh.; BEYLIN, V.Ya., inzh.; ZEL'VYANSKIY, A.Sh., inzh.; ZHIZLOV, N.I., otv. red.

[Selecting systems of multiple-horizon mining of flat seams in the Donets Basin] Vybor skhem sovmestnoi razrabotki pologikh plastov Donbassa. Moskva, Gosgortekhizdat, 1963. 106 p. (MIRA 17:5)

1. Donetsk. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut. 2. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Kuklin). 3. Ukrainskiy filial Vsesoyuznogo nauchno-issledovatel'skogo marksheyderskogo instituta (for Medyantsev).

KUKLIN, B.K., insh.; Prinimali uchastiye: TARATUTA, N.K., gornyy insh.; ZEL'VYANSKIY, A.Sh., gornyy insh.; BAKHEIN, A.F., gornyy insh.; BONDARENKO, Ye.D., gornyy insh.; FILIMONOV, A.F., gornyy insh. SOCHINSKIY, V.P., otv.red.; KHODNEVA, I.V., red.izd-va; IL'INSKAYA, G.M., tekhn.red.; BOLDYREVA, Z.A., tekhn.red.

[Selection of mining systems for flat Donets Basin seams] Vybor sistem razrabotki dlia pologikh plastov Donbassa. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 194 p. (MIRA 14:4)

(Donets Basin--Coal mines and mining)

KUKLIN, B.K.; prinimali uchastiye: ZEL'VYANSKIY, A.Sh., gornyy inzh.; BAKHTIN, A.F., gornyy inzh.; FILIMONOV, A.F., gornyy inzh.; TARATUTA, N.K., gornyy inzh.; BONDARENKO, Ye.D., gornyy inzh.; NEYKNBURG, V.Ye., kand. tekhn. nauk, otv. red.; NURMUKHAMEDOVA, V.F., red. izd-va; LOMILINA, L.N., tekhn. red.

[Analysing the methods of mining flat seams in the Donets Basin] Analiz sistem razrabotki pologikh plastov Donbassa. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 415 p. (MIRA 14:6)

(Donets Basin--Coal mines and mining)

BAKHTIN, A.F., gornyy insh.

Twin drifts for mining flat seams at great depths. Ugol' Ukr. 6 no.11:24-25 N '62. (MIRA 15:12)

1. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut.
(Donets Basin--Coal mines and and mining)

BAKHTIN, A.F., gornyy inzh.; PYATKIN, A.M., kand.tekhn.nauk

Readers' response to B.S. Lokshin, I.IA. Kiiashko and I.E. Kiiashko's article "Combined mining of coal seams in the Lisichanskugol' Trust mines. Ugol' Ukr. 6 no.8:44 Ag '62. (MIRA 15:11)

1. Donetskiy nauchno-issledovatel'skiy ugol'nyy instituta (for Bakhtin). 2. Institut gornogo dela AN UkrSSR (for Pyatkin).
(Mining engineering)
(Lokshin, B.S.) (Kiiashko, I.IA.) (Kiiashko, I.E.)

BAKHTIN, A.G. and AGAPOV, S.I.

BAKHTIN, A.G. and Agapov, S.I. ,"Formol Tissue Vaccine against Hog Cholera,"
SO: Vestnik Veterinariy, Moscow;2:26-29; 1941
Trans. X [illegible]

BAKHTIN, A.G.

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SO: Trudy Vsesoyuznogo Instituta Eksperimental'noy Veterinariy;19;2;1952 uncl

BAKHTIN, A.G., kandidat veterinarnykh nauk; KOROLEV, G.P., nauchny sotrudnik.

Prophylactic, therapeutic and recuperative measures in diseases of the respiratory and digestive organs in pigs. Veterinariia 32 no.1:46-49 Ja '55. (MLRA 8:2)

1.Nauchno-proizvodstvennaya laboratoriya po bor'be s boleznyami molodnyaka sel'skokhozyaystvennykh zhivotnykh Ministerstva sel'skogo khozyaystva RSFSR.
(SWINE--DISEASES)(ALIMENTARY CANAL--DISEASES)(RESPIRATORY ORGANS--DISEASES)

BAKHTIN, A.G., kandidat veterinarnykh nauk.

Gastrointestinal diseases in pigs and their control. Veterinariia 32 no.10:64-67 O '55. (MLRA 8:12)

1.Nauchno-proizvodstvennaya laboratoriya Ministerstva sovkhozov RSFSR.
(ALIMENTARY CANAL--DISEASES) (SWINE--DISEASES)

BAKHTIN, A.G., kandidat veterinarnykh nauk.

Dysentery in newborn pigs. Veterinariia 33 no.6:30-32 Je '56.
(MLRA 9:8)

1. Nauchno-proizvodstvennaya laboratoriya po bor'be s boleznyami molodnyaka sel'skokhozyaystvennykh zhivotnykh Ministerstva sovkhozov RSFSR.

(Dysentery) (Swine--Diseases and pests)

SOLOMKIN, P., prof.; BAKHTIN, A., kand. vet. nauk; KVASNIKOV, A., kand. vet. nauk; LEBEDEV, N., vet. vrach.

Manual with great shortcomings ("Infectious diseases in swine. Handbook for veterinary physicians and swine breeders" by P.N. Andreev, K.P. Andreev. Reviewed by P. Solomkin and others). Veterinariia 34 no.10:84-88 O '57. (MLRA 10:11)

(Communicable diseases in animals)
(Swine--Diseases and pests)
(Andreev, P.N.) (Andreev, K.P.)

LYUBASHENKO, S.Ya., prof.; ADAYKIN, P.V.; BAKHTIN, A.G., kand. veter. nauk; NIKITIN, I.N., veterinarnyy vrach (Irkutskaya oblast'); SAZONOV, Yu.I., veterinarnyy vrach (Irkutskaya oblast'); SAZONOVA, N.A., veterinarnyy vrach (Irkutskaya oblast')

Leptospirosis of farm animals. Veterinariia 41 no.7:36-42 Jl '64. (MIRA 18:11)

1. Nachal'nik veterinarnogo otdela Ul'yanovskogo oblastnogo upravleniya proizvodstva i zagotovok sel'skokhozyaystvennykh produktov (for Adaykin). 2. Vsesoyuznyy institut eksperimental'noy veterinarii (for Bakhtin).

BAKHTIN, A.I.

Utilizing the functions of the distribution of copper, lead, and zinc in geochemical studies. Geokhimiia no.12:1324-1327 D '64.
(MIRA 18:8)

1. Kazanskiy universitet.

BAKHTIN, A.K.; MECHIKOV, O.S.

Some results of using inclined holes in the Belogorskiy open-pit mine. Trudy Alt. GMNII AN Kazakh. SSR 13:109-114 '62. (MIRA 16:3)
(Belogorskiy region (East Kazakhstan Province)--Boring)

BAKHTIN, A.K.

Some problems in improving mining operations in the Andreyevskiy open-pit mine. Trudy Alt. GMNII AN Kazakh. SSR 13:115-120 '62. (MIRA 16:3)

(Leninogorsk region (East Kazakhstan Province)—Strip mining)
(Blasting)

MECHIKOV, O.S.; BAKHTIN, A.K.; KURLYANTSEV, V.P.

Stereophotographic and numerical determination of the content of oversize in the disintegrated rock of exploded masses. Trudy Alt. GMNII AN Kazakh. SSR 15:91-100 '63. (MIRA 17:3)

1. BARANOV, N. F.; BAKHTIN, A. V.; TROITSKIY, B. A.

2. USSR (600)

4. Agriculture - Study and Teaching

7. Work practice of an agricultural propaganda group of the Talovaya District Agriculture Section. Voronezh Province. Dost. sel'khoz. no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

BAKHTIN, B.T.; FOKHODZILO, V.N.

Seminar on boring and blasting operations in open-pit mines.
Met.i gornorud.prom. no.5:87 S-O '62. (MIRA 16:1)
(Strip mining) (Blasting)

BAKHTIN, G., inzh.

Restless mind. Sovakhkht. 10 no.11:24 N '61. (MIRA 14:11)

(Luganak Province--Coal miners)

BAKHTIN, B.T.

Seminar concerning the condition of the equipment and the technology of boring and blasting operations. Met. i gornorud. prom. no. 2:82 Mr-Ap '64. (MIRA 17:9)

BAKHTIN, B.T.

Iron ore mining in the Ukraine in 1962. Met. i gornorud. prom. no.3: 37-39 My-Je '63. (MIRA 17:1)

BAKHTIN, B.T.

Principle research carried out in 1963 for the mining and ore dressing industry of the Ukraine. Met. i gornorud. prom. no.3: 50-52 My-Je '64. (MIRA 17:10)

BAKHTIN, B.T.; NEGROBOV, V.P.

Seminar on the theme "Increasing labor productivity and reducing production costs in enterprises of the Ukrainian ore mining industry. Met. i gornorud. prom. no.3:80 My-Je '64. (MIRA 17:10)

SHOSTAK, A.G.; BAKETIN, B.T.; NADRUSOV, V.N.

Progressive systems of the underground mining of Krivoy Rog Basin ores.
Met.i gornorud. prom. no.6:82-85 N-D '63.
(MIRA 18:1)

BAKHTIN, B.T.; NEGROBOV, V.P.

Results of the seminar "New developments in the equipment and technology of strip mining iron and manganese ores." Met. i gornorud. prom. no.5: 73 S-O '64. (MIRA 18:7)

BAKHTIN, G.A., gornyy inzh.

Calculation of the basic parameters for breaking in pits. Nauch. trudy Mosk. inst. radioelek. i gor. elektromekh. no.46:119-127 '62. (MIRA 17:1)

RZHEVSKIY, Vladimir Vasil'yevich, prof., doktor tekhn. nauk;
BAKHTIN, Gennadiy Antonovich; LOMONOSOV, Gerald Georgiyevich;
NOVIK, Gotfrid Yanovich

[Technology and overall mechanization of coal, ore, and rock products strip mining] Tekhnologiia i kompleksnaia mekhanizatsiia otkrytoi dobychi uglia, rud i nerudnykh iskopaemykh. Moskva, Mosk. in-t radioelektroniki i gornoi elektromekhaniki. No.3. [Preparation of rocks for mining] Podgotovka gornykh porod k vyemke. Pt.1.[Technological processes] Tekhnologicheskie protsessy. 1963. 112 p. (MIRA 17:9)

BAKHTIN, G.V., inzh.

Flow sheet for automatically maintaining gas mixtures in sintering machines. Met. i gornorud. prom. no.6:68-69 N-D '62. (MIRA 17:8)

BAKHTIN, L. A.

Bakhtin, L. A. "Problems of the standardization of circulatory funds of lower-echelon construction organizations," Trudy Kazansk. Fin.-ekon. in-ta im. Kuybyshava, Issue 8, 1948, p. 163-82.

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nykh Statey, No. 19, 1949).

BAKHTIN, I. A. (Kasan')

Organisation of working capital in construction. Fin. SSSR 19 no.9:14-18 S '58. (MIRA 11:10)
(Construction industry--Finance)

BAKHTIN, I.A.

New technology of producing canned chicken. Mias.ind. SSSR 25 no.6:29-30 '54. (MLRA 8:1)

1. Glavnyy inzhener Rossoshanskogo ptitsekombinata.
(Poultry)

BAKHTIN, Ivan Aleksandrovich; GORIZONTOVA, Ye.A., spetsred.; IVANOVA, N.M., red.; SOKOLOVA, I.A., tekhn. red.

[Butchering and processing poultry] Uboi i obrabotka ptitsy. Moskva, Pishchepromizdat, 1958. 40 p. (MIRA 11:7)
(Poultry plants)

BAKHTIN, Ivan Aleksandrovich; ITUNINA, R.G., red.; SKRADZSKAYA, P.G., tekhn.red.

[Poultry plant] Fabrika ptich'ego miasa. Voronezh, Voronezhskoe knizhnoe izd-vo, 1960. 46 p. (MIRA 14:1)

1. Direktor Rossoshanskoy ptitsefabriki (for Bakhtin).
(Rossosh'--Poultry plants)

BAKHTIN, I.A.

SUBJECT USSR/MATHEMATICS/Integral equations CARD 1/3 PG - 156
AUTHOR BACHTIN I.A., KRASNOSELSKIJ M.A.
TITLE To the problem on the longitudinal flexure of a beam of variable flexural rigidity.
PERIODICAL Doklady Akad. Nauk 105, 621-624 (1955)
reviewed 7/1956

The author uses the method of the non-linear functional analysis for the investigation of the longitudinal flexure of a thin beam of variable flexural rigidity which is fastened by a hinge. One end of the beam can move in the horizontal plane. The corresponding differential equation be

$$\frac{d^2y}{ds^2} = -P\varphi(s)y\sqrt{1-\left(\frac{dy}{ds}\right)^2} \tag{1}$$

with the boundary conditions

$$y(0) = y(1) = 0 \tag{2}$$

(P is the charge, $\varphi(s)$ the flexural rigidity, s the length of the curved beam, y the corresponding deviation from the equilibrium position). By $\frac{d^2y}{ds^2} = -\psi(s)$ the solution of this equation can be reduced to the determination

Doklady Akad. Nauk 105, 621-624 (1955)

of $\varphi(s)$ of the integral equation $\varphi(s) = B\varphi(s)$, where

$$B\varphi(s) = \varsigma(s)\int_0^1 G(s,t)\varphi(t)dt\left(1-\left[\int_0^1 G_0^2(s,t)\varphi(t)dt\right]^2\right)^{\frac{1}{2}},$$

and the determination of $y(s)$ of

$$y(s) = A\varphi(s) = \int_0^1 G(s,t)\varphi(t)dt$$

$$G(s,t) = \begin{cases} s(1-t) & \text{for } s \leq t \\ t(1-s) & \text{for } t \leq s. \end{cases}$$

The operator B is considered on the sphere $T \leq 0$ (C the space of the functions being continuous on $[0,1]$) of radius 1/2. It is complete on T and differentiable according to Frechet, where its Frechet's derivative in the zero point of the space is the operator $D\varphi(s) = \varsigma(s)A\varphi(s)$. If $0 \leq \varphi(s) \leq 1/2$, then $B[t\varphi(s)] \geq tB\varphi(s)$ $(0 \leq t \leq 1)$. If $\varphi_1(s) \geq \varphi_2(s)$ $(0 \leq \varphi_1(s), \varphi_2(s) \leq 1/2$, $\varphi_1(s) \not\equiv \varphi_2(s))$, then there exists an α such that $B\varphi_1(s) - B\varphi_2(s) \geq \alpha\varsigma(s)s(1-s)$. The charge F_0 is called critical if for arbitrary $\varepsilon, \delta > 0$ there exists a

solution of (1)-(2) being different from zero, which satisfies the inequation $|y(s)|<\varepsilon$ if at the same time $|P-P_c|<\delta$. The critical forces of the considered problem agree with the eigenvalues P_k of the boundary value problem

$$\frac{d^2y}{ds^2} = P\,\xi(s)y \qquad y(0) = y(1) = 0.$$

The investigation of the question, when (1)-(2) admits small solutions, yields the theorem: For critical charges P_k $(k=1,2,\ldots)$ the equation $\varphi(s) = PB\,\varphi(s)$ has no small solutions being different from zero. To every P_k there corresponds an interval $\Delta_k = (P_k, P_k+h_k^2)$ such that for $P \in \Delta_k$ the equation $\varphi(s) = PB\,\varphi(s)$ has solutions being different from zero, which for $P \longrightarrow P_k$ tend to zero together with their second derivatives. The proofs of the theorems and lemmas are sketched.

INSTITUTION: Public University Voronezh.

AUTHOR: BAKHTIN, I.A.

20-1-2/42

TITLE: On a Class of Equations With Positive Operators (Ob odnom klasse uravneniy s polozhitel'nymi operatorami)

PERIODICAL: Doklady Akad.Nauk SSSR, 1957,Vol.117,Nr1,pp.13-16 (USSR)

ABSTRACT: The author gives a new definition of the concave operators and shows that various well-known theorems which are set up for more special equations remain valid for equations with these operators.
Let K and K_1, $K \subset K_1$ be two cones in the real Banach space E. The sign $\leqslant$ is assumed to denote the semiorder generated by K_1, i.e.: $x \leqslant y$, if $y - x \in K_1$. Let K_r be the intersection of K with the sphere $\|\varphi\| \leqslant r$. It is assumed that $\|x\| \leqslant \|y\|$, if $0 \leqslant x \leqslant y$. The operator A defined on K_r, in general non-linear, is denoted positive, if $AK_r \subset K$, and is denoted monotonous, if from $\varphi \leqslant \psi (\varphi, \psi \in K_r)$ it follows that $A\varphi \leqslant A\psi$. Let u_0 be a fixed zero element from K. Definition: The positive and monotoneous operator A is denoted $\{K_1, u_0\}$ - concave, if: 1. To each $\varphi \in K_r (\varphi \neq 0)$ there correspond such numbers $\alpha, \beta > 0$ that $\alpha u_0 \leqslant A\varphi \leqslant \beta u_0$; 2. From $\varphi \in K_r$ and $\varphi \geqslant \gamma u_0$ $(\gamma > 0)$ it follows:

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$A\,t\varphi \geqslant t\,A\varphi$, $A\,t\varphi \neq t\,A\varphi$ $(0<t<1)$ 3. For each pair of elements $\varphi_1, \varphi_2 \in K_r$ $(\varphi_1, \varphi_2 \geqslant \alpha u_0,\ \alpha>0, \varphi_1 - \varphi_2 \in K_1)$ from $\varphi_1 \geqslant t\varphi_2$ $(t>0, \varphi_1 \neq t\varphi_2)$ it follows $A\varphi_1 - t\,A\varphi_2 \geqslant \delta u_0 (\delta>0)$

Theorem: The operator A $(A\,\theta = \theta)$ is assumed to be completely continuous and $\{K_1\ u_0\}$ - concave. Then the following holds:

1. The eigenvectors of A form a continuous branch in K_r of the length r (the boundary Γ of an arbitrary domain in E is assumed to lie in the sphere $\|x\| \leqslant r$ and the zero θ is assumed to lie on Γ; as a continuous branch such a set $\mathfrak{M}$ of eigenvectors is denoted that for an arbitrary domain it is $\mathfrak{M} \cap \Gamma \neq 0$.
2. The corresponding eigen values fill completely an interval.
3. To each eigen value λ there corresponds in K_r only one non-vanishing solution $\varphi(\lambda)$ of the equation $A\varphi = \lambda\varphi$.
4. From $\lambda_1 < \lambda_2$ it follows $\varphi(\lambda_2) \leqslant \varphi(\lambda_1)$.
5. $\varphi(\lambda)$ is strongly continuous. - 6 Soviet and 1 foreign references.

ASSOCIATION: Voronezh State University (Voronezhskiy gosudarstvennyy universitet)

PRESENTED: By P.S.Aleksandrov, Academician, April 27, 1957
SUBMITTED: April 20, 1957
AVAILABLE: Library of Congress
Card 2/2

BAKHTIN, I.A., C nd Phys-Math Sci—(diss) "On positive solutions of non-linear equations with concave operators." Voronezh, 1958. 7 pp (Min of Higher Education USSR. Voronezh State U), 150 copies (KL,30-58, 121)

AUTHORS: Bakhtin,I.A., and Krasnosel'skiy,M.A. SOV/20-123-1-3/56

TITLE: On the Theory of Equations With Concave Operators (K teorii uravneniy s vognutymi operatorami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 1,pp 17-20 (USSR)

ABSTRACT: Let K and K_1, $K \subset K_1$, be cones in the real Banach space E. $x \leq y$ denotes that $y-x \in K_1$. For arbitrary $x,y \in K$ let the relation $\|x\| \leq m \|y\|$ follow from $x \leq y$. Let the nonlinear operator A be defined on K and let $AK \subset K$. From $x \leq y$ let follow $Ax \leq Ay$. To every $x \in K$ let exist numbers $\alpha, \beta > 0$ so that $\alpha u_0 \leq Ax \leq \beta u_0$. For $0 < t < 1$ let $Atx \geq tAx$; $Atx \neq tAx$ for all $x \in K$ for which $x \geq \gamma u_0$, $\gamma > 0$. Operators A with these properties are called concave. The concave operator A is called $\{K,u_0\}$-concave if for $x,y \in K$, where $x \geq \gamma u_0$, $y \geq \gamma u_0$ ($\gamma > 0$), $y-x \in K_1$, it holds that from $tx \leq y$ ($tx \neq y$, $t > 0$) there follows $Ay-tAx \geq \delta u_0$, where $\delta > 0$.

Theorem: Let A be concave and completely continuous, let $\varphi = A\varphi$ have a unique, not vanishing solution φ^* in K. Then the successive approximations $\varphi_{n+1} = A\varphi_n$ converge to φ^* with

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respect to the norm for all $\varphi_0 \in K$, $\| \varphi_0 \| \neq 0$.

Theorem: Let the functions $K(s,t,u)$ and $\phi(s,t,u) = \frac{1}{u} K(s,t,u)$ continuous in u and positive for $u>0$ have the following properties: a) $K(s,t,0) \equiv 0$, $K(s,t,u)$ monotonely increasing for increasing u, $0 \leq u < \infty$; b) for $0 \leq u_1 < u_2$ it holds:

$$\inf_{a \leq s,t \leq b} [\phi(s,t,u_1) - \phi(s,t,u_2)] > 0;$$ c) for $u \to 0$, $u \to \infty$ there exist uniform limit values of $\phi(s,t,u)$ with respect to s,t; for $u \to 0$ a positive bounded function is obtained, for $u \to \infty$ either a positive bounded function or zero is obtained.

Let $A\varphi = \int_a^b K[s,t,\varphi(t)]dt + f(s)$. Let the equation $\varphi = A\varphi$, where $f(s)$ is a non-negative function, have a positive solution $\varphi^*(s)$.

Then the sequence

$$\varphi_{n+1}(s) = \int_a^b K[s,t,\varphi_n(t)]\,dt + f(s)$$

On the Theory of Equations With Concave Operators SOV/20-123-1-3/56

converges uniformly to $\varphi^*(s)$ for every non-negative function $\varphi_0(s)$, $\varphi_0(s) \not\equiv 0$.

Two further theorems contain refinements of these assertions for some special cases (e.g. for special $\{K_1, u_0\}$ -concave operators).

There are 8 Soviet references.

ASSOCIATION: Voronezhskiy gosudarstvennyy universitet (Voronezh State University)

PRESENTED: June 9, 1958, by P.S.Aleksandrov, Academician

SUBMITTED: May 10, 1958

Card 3/3

16(1)

AUTHOR: Bakhtin, I.A. SOV/20-126-1-1/62

TITLE: On Non-Linear Equations With Concave and Uniformly Concave Operators (O nelineynykh uravneniyakh s vognutymi i ravnomerno vognutymi operatorami)

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol 126,Nr 1, pp 9 - 12 (USSR)

ABSTRACT: In the theory of non-linear equations with concave operators in Banach spaces with one or two cones developed by M.A. Krasnosel'skiy, L.A. Ladyzhenskiy and the author [Ref 3-7] the complete continuity of the operators is assumed. In the present paper it is shown that this theory can be extended to certain classes of equations for which the occurring concave operators are not completely continuous. Instead of this certain assumptions of algebraic character are introduced so that the proof of the existence theorems is based on algebraic considerations. In this way among others some well-known results on completely continuous concave operators are newly proved. Six theorems are given. The author thanks his teacher M.A. Krasnosel'skiy for advices. He mentions M.G. Kreyn.

Card 1/2

On Non-Linear Equations With Concave and Uniformly Concave Operators. SOV/20-126-1-1/62

There are 7 Soviet references.

ASSOCIATION: Voronezhskiy gosudarstvennyy pedagogicheskiy institut (Voronezh State Pedagogical Institute)

PRESENTED: January 16, 1959, by P.S. Aleksandrov, Academician

SUBMITTED: January 13, 1959

Card 2/2

BAKHTIN, I.A.

One class of nonlinear integral equations. Trudy Sem.po funk.anal. no.3/4:122-130 '60. (MIRA 14:10)
(Integral equations)

S/199/61/002/003/001/005
B112/B203

AUTHORS: Bakhtin, I. A., Krasnosel'skiy, M. A.

TITLE: Method of successive approximations in the theory of equations with concave operators

PERIODICAL: Sibirskiy matematicheskiy zhurnal, v. 2, no. 3, 1961, 313 - 330

TEXT: The authors communicated the most important results of this study in an earlier paper (Ref. 1: K teorii uravneniy s vognutymi operatorami. Doklady Ak. nauk SSSR, 123, no. 1, (1958) 17 - 20) without giving a proof. The subject of the study are equations with operators transforming non-negative functions into non-negative functions. The authors consider a real Banach space E in which two cones, K and K_1, are distinguished where $K \subset K_1$. The relation $x \leqslant y$ means that $y - x$ is contained in K_1. The cone K_1 is regular if any monotonic and bounded sequence $x_n (x_1 \leqslant x_2 \leqslant \dots \leqslant x_n \leqslant \dots \leqslant z_o)$ converges with respect to its norm. By

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Method of successive approximations ...

$K\langle v_0, w_0\rangle$, the authors designate the set of all $x\in K$, for which $v_0 \leqslant x \leqslant w_0$ holds. A continuous operator A is monotonic on a set $T\subset E$, if the inequality $Ax \leqslant Ay$ results from $x \leqslant y$ ($x, y\in T$). The operator A is concave on K if it is positive and monotonic, if for any element $x\in K$ differing from the zero element there are positive numbers α and β, so that $\alpha u_0 \leqslant Ax \leqslant \beta u_0$, and if for any element $x\in K$ satisfying the condition $x \geqslant \gamma u_0$ ($\gamma > 0$) the relation $A(t, x) \geqslant tAx$, $Atx \neq tAx$ ($0 < t < 1$) is fulfilled. Here, u_0 is a certain element of K differing from the zero element. A concave operator A is u_0-concave if for any $x\in K$ ($x \geqslant \gamma u_0, \gamma > 0$) and for any interval $[a, b] \subset (0, 1)$ there is a number $\eta = \eta(x; a, b) > 0$, so that $A(tx) \geqslant (1 + \eta)tAx$. The authors prove the following theorems: (1) If an operator A monotonic on $K\langle v_0, w_0\rangle$ transforms the set $K\langle v_0, w_0\rangle$ in itself, then it is sufficient for the existence of a fixed point that one of the following three conditions is fulfilled: (a) the cone K is regular, (b) the operator A is fully continuous, (c) a non-decreasing, for $r > 0$ positive function $\alpha(r)$ exists so that $A(x + y) \geqslant Ax + \alpha(\|y\|)z_0$ ($x, x + y \in K\langle v_0, w_0\rangle$, $y\in K$), where

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z_0 is a certain element in K differing from the zero element. (2) If the conditions of theorem 1 are fulfilled, and if there is only one fixed point x*, then the latter is the limit element of the successive approximations $x_n = Ax_{n-1}$ (n = 1, 2, ...), whatever element x_0 is the initial element of this approximation. (3) If the equation x = Ax with the concave operator A on the cone K has a unique solution x* differing from the zero solution, and if one of the three conditions (a, b, c) of theorem 1 is fulfilled, then the sequence $x_n = Ax_{n-1}$ converges with respect to its norm, whatever point $x_0 \in K$ is the initial point of the approximation. (4) If the equation x = Ax with the u_0-concave operator A in the cone K has a solution x* differing from the zero solution, then the sequence $x_n = Ax_{n-1}$ converges for all $x_0 \in K$ with respect to its u_0-norm toward x* (the u_0-norm of x is the smallest number ρ for which the inequality $-\rho u_0 \leqslant x \leqslant \rho u_0$ is fulfilled). (5) If the operator A is concave, and if for any elements v and w ($v > \gamma_1 u_0$, $\gamma_1 > 0$) differing from zero $Aw > t_0 Av + \varepsilon_0 u_0$ ($\varepsilon_0 = \varepsilon_0(v, w, t_0) > 0$) follows from $t_0 v \leqslant w \leqslant v$ ($t_0 v \neq w$, $w \neq v$),

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then the operator A^2 is u_0-concave. Theorem (6) expresses the monotony and concavity of an operator of particular structure. The authors present some applications of the theorems proven. They mention M. G. Kreyn and P. S. Uryson. There are 13 Soviet-bloc references.