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[Theory of mechanisms and machines] Teoriia mekhanizmov i mashin. Minsk, Izd-vo M-va vysshego, srednego spetsial'nogo i professional'nogo obrazovaniia BSSR. Pt.1.[Structure and kinematics of mechanisms] Struktura i kinematika mekhanizmov. 1962. 158 p. (MIRA 16:6)

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1. Nachal'nik Otdela pozharnoy okhrany, g.Bryansk (for Markov).
2. Inspektor Otdela pozharnoy okhrany, Novgorod (for Sokolov).
3. Nachal'nik Otryada pozharnoy okhrany, poselok Znamensk, Kaliningradskaya oblast' (for Alekhov).
(Fire extinction)

ALEKHOV, V.I.

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(Flax) (Hemp)

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(Coal mining machinery)

ALEKHOVA, Z.N., inzh.

Study of stresses in milling sandstone. Nauch.soob.Inst.gor.dela 7:105-110 '61. (MIRA 15:1)

(Sandstone--Testing)

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Laboratory unit for milling rocks. Nauch. soob. Inst. gor. dela 4:74-77 '60. (MIRA 15:1)
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[The organization of standard workshops for students of the "metal technology" departments of technical colleges] Metodika organizatsii tipovykh uchebnykh masterskikh kafedry "Tekhnologiia metallov" vtuzov. Moskva, Sovetskaia nauka, 1953. 243 p. (MLRA 7:7)

1. Moscow. Moskovskoye vysshoye tekhnicheskoye uchilishche. Kafedra "Tekhnologiya metallov".
(Metalwork--Study and teaching)

KASPRZHAK, G.M.; ALEKIN, L.Ye.

Structure and methodology in analysing the process of self-regulation of the arc in welding. Trudy Sekts. po nauch. razrab. probl. elektrosv. i elektroterm.AN SSSR no.1:69 '53. (MLRA 6:9)
(Electric welding)

ALEKIN, L.E.

Electrical Engineering Abst.
Vol. 57 No. 675
Mar. 1954
Mechanical and Civil Engineering Technology

621.791.75 : 621.316.72

1316. Problems in the theory of self-regulation in welding with consumable electrodes. G. M. KASPRZHAK AND L. E. ALEKIN. *Elektrichestvo*, 1953, *No.* 5, 41–9. *In Russian.*

The mechanism of arc self-regulation in welding with a consumable metal electrode and with independent rate of feed of the electrode wire is described. The analysis and calculation of this kind of automatic regulation is explained. The concepts of amplification factors and time constants of the links and circuits of the system of self-regulation are introduced and expressions are found for the transmission functions of the system for supply system disturbances. Recommendations are made for improvements in the self-regulation process. The practical value of the method is shown on a practical example and experimental data illustrate its accuracy. Analysis of the regulation process shows that it is not purely astatic, but is essentially both a current and voltage regulating process. The effect of supply voltage variations on weld irregularities and of the transient processes on weld quality are investigated theoretically and compared with experimental data. B. F. KRAUSE

ALEKIN, L, YE.

Dissertation: "Investigation of the Properties of a System of Arc Self-Regulation in Submerged-Arc Welding." Cand Tech Sci, Moscow Order of Labor Red Banner Higher Technical School imeni Bauman, 19 Apr 54. (Vechernyaya Moskva, Moscow, 6 Apr 54)

SO: SUM 243, 19 Oct 1954

ALEKIN, Lev Yemel'yanovich, kandidat tekhnicheskikh nauk, dotsent; GLADILIN, Anatoliy Nikolayevich, kandidat tekhnicheskikh nauk, dotsent; KRASAVIN, Vasiliy Stepanovich, starshiy prepodavatel'; LUNEV, Fedor Andreyevich, kandidat tekhnicheskikh nauk, dotsent; MAKAROVA, Vera Ivanovna, kandidat tekhnicheskikh nauk, dotsent; RASTORGUYEV, Ivan Sergeyevich, kandidat tekhnicheskikh nauk, dotsent; KHRENOV, Aleksey Dmitriyevich, starshiy prepodavatel'; TSEYTLIN, V.E., kandidat tekhnicheskikh nauk, redaktor; RZHAVINSKIY, V.V., inzhener, redaktor; SHUR, D.S., redaktor; EGGERT, A.P., tekhnicheskiy redaktor.

[General technology of metals] Obshchaia tekhnologiia metallov. Moskva, Vses.uchebno-pedagog.izd-vo Trudrezervizdat, 1956. 327 p. (MLRA 9:6)
(Metalwork)

18 (2, 3, 5)

SOV/125-59-11-6/22

AUTHOR: Alekin, L.Ye., Candidate of Technical Sciences

TITLE: Estimating Regulation of Quality of Weld Geometrical Sizes

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 11, pp 37-44 (USSR)

ABSTRACT: Dimensions of weld and, particularly, the depth of penetration are the main factors determining the strength of welded joints. Research carried out under the guidance of G.A. Nikolayev at the MVTU imeni Bauman established that the strength of butt welds having a lack of penetration of 6-17% is decreased for the steel St3, practically, by twice; from 15 to 8.7 kg/mm^2, and for the steel 30KhGS - from 20 to 10 kg/mm^2. It is, therefore, very important to establish the dependance of welding conditions on the weld size. For this purpose the author suggests application of the method of quality regulation coefficients, which express the relation between the weld size deviation value and the value of the disturbance which provoked

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Estimating Regulation of Quality of Weld Geometrical Sizes

this deviation. In Figs 1 and 3, curves showing the coefficient of quality regulation of penetration depth depending on the disturbance provoked by the feed speed are given. In Figs 2 and 4, dependence: depth of penetration - mains voltage is given. In other Figures, the following dependences are given: Arc current - feed speed (Fig 5); arc current - mains voltage (Fig 6); arc voltage - feed speed (Fig 7); arc voltage - mains voltage (Fig 8). The author gives several examples on how to determine the deviation of weld dimensions depending on conditions of welding. There are 8 graphs and 9 references, 8 of which are Soviet and 1 German.

ASSOCIATION: MVTU imeni Baumana (MVTU imeni Bauman)

SUBMITTED: February 26, 1959

Card 2/2

ALEKIN, L.Ye., dotsent, kand.tekhn.nauk; GLADILIN, A.N., dotsent, kand. tekhn.nauk; KRASAVIN, V.S., starshiy prepodavatel'; LIFERENKO, N.N., dotsent, kand.tekhn.nauk; MAKAROVA, V.I., dotsent, kand. tekhn.nauk; KHRENOV, A.D., starshiy prepodavatel'. Prinimali uchastiye: LUNEV, F.A. [deceased]; RASTORGUYEV, I.S. [deceased]; BILINSKIY, M.Ya., red.; DORODNOVA, L.A., tekhn.red.

[General technology of metals] Obshchaia tekhnologiia metallov. Izd.3., perer. i dop. Moskva, Vses.uchebno-pedagog.izd-vo Proftekhizdat, 1960. 381 p. (MIRA 13:12)
(Metals) (Metalwork)

ALEKIN, L.Ye.

Inertia of the melting of an electrode wire and the depth of fusion of a metal during its automatic welding under flux. Avtom. svar. 16 no.10:1-7 O '63. (MIRA 16:12)

1. Moskovskoye vysshcye tekhnicheskoye uchilishche imeni Baumana.

ALEKIN, L.Ye.; MIKAYELYAN, V.G.

Effect of conditions of the automatic welding of aluminum on the size of the weld. Avtom.svar. 17 no.1:48-54 Ja '64. (MIRA 17:3)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.

ALEKIN, L.Ye.; MIKAYELYAN, V.G.

Character os the melting process of an electrode wire during electric welding. Avtom. svar. 17 no.9:47-54 S '64.
(MIRA 17:10)

1. Moskovskoye vysshaye tekhnicheskoye uchilishche im. Baumana.

L 53878-65 EWT(d)/EPA(s)-2/EWT(m)/EWA(d)/EWP(v)/EPR/T/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(1)/EWA(c) Pf-4/Ps-4 IJP(c) JD/HM

ACCESSION NR: AP5014897

UR/0135/65/000/006/0025/0027 38 37 B

621.791.756: 669.715

AUTHOR: Alekin, L. Ye. (Cand. of technical sciences); Mikayelya, V. G. (Engineer)

TITLE: Effect of the regime of automatic welding of aluminum on the porosity of the weld joint 19 27

SOURCE: Svarochnoye proizvodstvo, no. 6, 1965, 25-27

TOPIC TAGS: automatic welding, weld joint, porosity, welding regime, arc voltage, degassing, welding rate, flux welding, weld density, weld porosity, aluminum welding /ADS-1000-2 automatic arc welding machine

ABSTRACT: Deviations from the welding regime and their effect on weld-joint porosity were experimentally investigated in an ADS-1000-2 automatic arc-welding machine. The beading was performed with currents of 380, 410, 4470, 470, 500, and 530 amperes, at arc voltages of 30, 37, and 44 volts, and welding rates of 10, 15, and 20 m/hr. Microsections of the weld metal were examined for the presence of pores with the aid of X-ray photography and visual inspection with threefold magnification. It was established that in the automatic arc welding of aluminum and its alloys, definite deviations of parameters of the welding

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L 53878-65
ACCESSION NR: AP5014897

regime from specified optimal values may cause porosity in the joint metal even if all the other technological parameters of the process are strictly observed. The range of welding regimes within which a weld joint of good quality can be obtained lies within comparatively narrow limits. Off-optimal deviations of 8-10% in current intensity i_{∂}, 13-15% in arc voltage U_{∂}, and 20-25% in welding rate v_w may cause pores. Given identical relative deviation of regime parameters, the porosity of weld metal is most greatly affected by the arc current, on which the conditions of the degassing of molten metal depend greatly. Definite deviations of arc voltage, which affects bath width and the stability of arc combustion, may also cause porosity. The effect of welding rate on porosity is small if the deviations in this rate are small. In the presence of considerable deviations in v_w (of the order of 4-5 m/hr), however, pores appear in the weld metal, as a rule. The automatic flux welding of aluminum in a machine with a fixed rate of electrode-wire feed results in a weld metal of satisfactory density considering the normally encountered range of deviations in the energy parameters of the welding regime. Orig. art. has: 4 figures, 2 formulas.

ASSOCIATION: MVTU im. N. E. Baumana

SUBMITTED: 000 ENCL: 00 SUB CODE: MM

NO REF SOV: 008 OTHER: 000

Card 2/2

L 31322-66 EWT(m)/EWA(d)/EWP(t) IJP(c) JD
ACC NR: AP5026291 SOURCE CODE: UR/0125/65/000/010/0038/0040
AUTHOR: Alekin, L. Ye. (Candidate of technical sciences); Il'yenko, N. A. (Engineer); Guma, V. V. (Engineer)
ORG: [Alekin, Il'yenko] MVTU im. Baumana
TITLE: Pressure of low-amperage argon arc on the molten pool
SOURCE: Avtomaticheskaya svarka, no. 10, 1965, 38-40
TOPIC TAGS: arc welding, low amperage welding arc, welding technology, welding electrode, molten metal

ABSTRACT: The welding arc exerts a definite mechanical effect, termed arc pressure, on the pool of molten metal. During welding with a nonconsumable electrode, this effect is created chiefly by the pressure of the arc's plasma jet and conditioned by the pinch effect. Since during welding, in an overwhelming majority of cases, the electrode is positioned at right angles to the weldment, the molten pool is acted upon not only by arc pressure but also by the electromagnetic force of the welding circuit. In this connection, the authors designed a special setup for measuring the pressure of low-amperage argon arc on the molten pool during welding with a nonconsumable electrode (see Fig. 1 of the Enclosure). Its principal feature is mobile rod 5, with plate 6 of OKh13N9T stainless steel attached to one end of the rod and counter.

1/3 UNC: 621.791.856

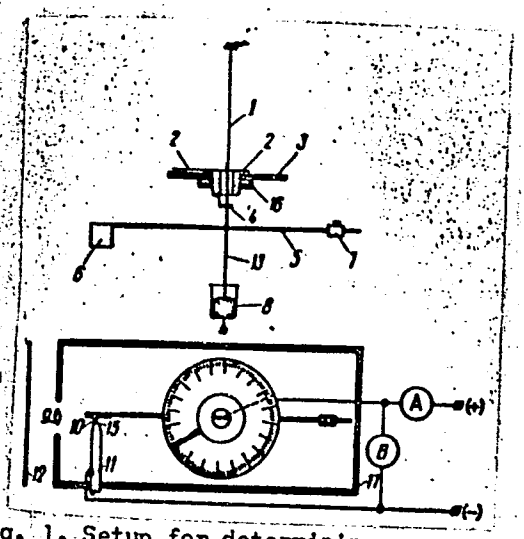

Fig. 1. Setup for determining arc pressure
3 -scale; 8 - mercury contact; 10 - arc; 11 - welding torch; 16 - fixed base; 17 - protective casing; for the other designations consult the text

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L 31322-66
ACC NR: AP5026291

weight 7 attached to its other end. Soldered to rod 5 is copper rod 13, with one end immersed in a mercury bath and with thin silk thread 1 tied to the other end. In this position, mobile rod 5 is in a state of equilibrium. Arc pressure is balanced by means of helical spring 4, one end of which is affixed to rod 13 and the other end, to bushing 2 with a pointer. The arc burns between plate 6 and electrode 15. By means of lens 9 the arc is projected onto screen 12 with tenfold magnification. The experiment is performed as follows: Gas is turned on, thus deviating the mobile part of the device. This deviation is compensated by the bushing with helical spring 4. Bushing 2 rotates until the necessary distance is established between electrode 15 and plate 6. Then the pointer of the device indicates the gas pressure (in mg). The arc ignites. Its pressure is balanced by further rotation of bushing 2 until the necessary arc length is obtained. The difference in readings gives the arc pressure. The length of the arc is determined from its projection onto screen 12. In this way, it was determined that during welding with a 2-13 a argon arc by means of a tungsten electrode (1.5 mm diameter) the arc pressure on the molten pool varies from 0.2 to 10.5 mg and is directly proportional to the square of current intensity. As the arc length increases, the arc pressure decreases insignificantly. A change of 50% in the flow rate of protective gas does not appreciably affect the arc pressure. Orig. art. has: 3 figures.

SUB CODE: 11,13/ SUBM DATE: 19Nov64/ ORIG REF: 005/ OTH REF: 003

Card 3/3

L 20544-66 EWT(m)/EWP(v)/T/EWP(t)/EWP(k) JD/HM
ACC NR: AP5023077 SOURCE CODE: UR/0125/65/000/009/0005/0007

AUTHOR: Aleldn, L.Ye. (Candidate of technical sciences); Zorin, Yu.N. (Candidate of technical sciences); Razzhivin, V.N. (Engineer); Guma, V.V. (Engineer) (Moscow); Popenko, V.S. (Engineer) (Moscow)

57

B

ORG: none

TITLE: Determination of the volt ampere characteristics of a low-current welding arc

SOURCE: Avtomaticheskaya svarka, no. 9, 1965, 5-7

TOPIC TAGS: volt ampere characteristic, arc welding, welding, welding electrode, arc discharge, arc property

ABSTRACT: A method of determining volt ampere characteristics of a low-current arc in argon is described. It is shown that the error in arc column and length determinations can be eliminated by photographing the arc with two cameras arranged at right angles to each other. A clear picture of the entire area including the electrode, weld, cathode spot, anode spot, and column can be obtained with the aid of additional rings and light filters. The true distance between the tip of the electrode and the weld in the presence of a flash arc is determined within an accuracy of 0.01 mm by taking into account the thermal expansion of the electrode. The arc is ignited on a special pipe with escalated ribs fusable in the molten pool in order to eliminate

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ACC NR: AP5023077 O

measurement errors due to sinking of the arc in the base metal and to obtain a molten pool at any welding current. This method was used in determining the static volt ampere characteristic and the relationship between the arc current and gap in argon welding with a nonfusible tungsten electrode. Orig. art. has: 4 figures.

SUB CODE: 13,09 SUBM DATE: 22Jun64 ORIG REF: 004

Card 2/2 LJC

ACC NR: AP7004192 SOURCE CODE: UR/0125/67/000/001/0019/0021

AUTHOR: Alekin, L. Ye.; Il'yenko, N. A.

ORG: MVTU im. N. E. Bauman

TITLE: Effect of welding conditions and accuracy of assembling of the welded joint on the formation of the suspension weld

SOURCE: Avtomaticheskaya svarka, no. 1, 1967, 19-21

TOPIC TAGS: stainless steel, welding technology, butt welding, automatic welding, weld evaluation/ OKh18N9T stainless steel

ABSTRACT: Although the common consensus is that the butt welding of thin metal sections must follow a rigorously maintained welding regime, there is no direct proof of this. Previous studies of the dependence of geometrical dimensions of the weld in such cases pertained to continuous metal without any clearance and hence their findings do not reflect all the features of the weld formation in cases where the argon-atmosphere butt welding of joints, and particularly pipe joints, is performed by automatic welding machines so that at first the weld takes form by gravity. To determine the accuracy with which the automatic welding machine must maintain the parameters of the welding process it is primarily necessary to investigate the effect of welding current, welding voltage and welding rate on the geometrical dimensions of the

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ACC NR: AP7004192

weld. Accordingly, the authors investigated the argon-arc nonconsumable-electrode welding of OKh18N9T stainless steel 0.2 and 1 mm thick, performed so as to preclude any constriction of the clearance between the specimens during the welding. The geometrical dimensions of the weld were determined with the aid of an epidioscope. These experiments showed that the welding of the 1 mm thick metal over a clearance of the width 0.1 mm does not result in any explicit burnout or poor penetration or weakening of the weld when the current I_w is varied from 55 to 130 a; the arc length L_a, from 0.15 to 1.3 mm; the arc voltage U_a, from 7 to 8 v; and the welding rate v_w, from 15 to 35 m/hr. A similar pattern was observed for the metal 0.2 mm thick. Nevertheless it turns out that considerations of weld geometry require some restriction of this range of variation in energy parameters. Thus,e.g. for the 1 mm thick steel with a clearance of 0.1 mm it is desirable that L_a = 0.4-1.30 mm; I_w = 55-80 a; U_a = 7-8 v; v_w = 15-35 m/hr. A similar range of variations in energy parameters should be followed in the case of clearance-free welding or toe welding of metals of the same thickness. Orig. art. has: 3 fig. and 1 table.

SUB CODE: 13, 11/ SUBM DATE: 18Jul66/ ORIG REF: 005

Card 2/2

ACC NR: AP7001837 (A) SOURCE CODE: UR/0135/66/000/012/0009/0011

AUTHOR: Alekin, L. Ye. (Candidate of technical sciences); Zorin, Yu. N. (Candidate of technical sciences); Razzhivin, V. N. (Engineer); Guma, V. V. (Engineer); Popenko, V.S. (Engineer)

ORG: none

TITLE: Methods of determining the regulation characteristics of a low-amperage arc in argon

SOURCE: Svarochnoye proizvodstvo, no. 12, 1966, 9-11

TOPIC TAGS: motion picture camera, current source, welding inspection, arc welding, welding technology / Kiev 16S-2 motion picture camera, IP-50 current source

ABSTRACT: At present argon-arc welding by means of automatic welding machines (AWM) with a nonconsumable electrode is widely employed to weld parts of stainless steel 0.2-1.0 mm thick in argon with the aid of positive-polarity direct current with an 0.25-3.0 mm long arc. The intensity of the welding current ranges from 1.0 to 70 a. The ultimate purpose of regulation is to produce a welded joint of high quality. But since the AWM affects directly not the

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weld but the arc, this regulation can be accomplished only if the regulation characteristic, i.e. the dependence of voltage on arc length, is known, since the AWM reacts directly not to the length but to the voltage of the arc. Normally the regulation characteristic is determined by static tests or from a recalculation of volt-ampere characteristics of the arc, but this does not reveal all the features of the regulation characteristic, particularly for the welding of parts 0.2-0.5 mm thick with the aid of a short arc with currents of less than 30 a. Of special practical interest in this connection is the part of the regulation characteristic corresponding to arcs of less than 0.5 mm in length; if in this case the voltage is either virtually independent of the arc length or increases with decreasing arc length, then even a highly sensitive feedback-type AWM cannot assure the regulation of arc length with respect to voltage. To eliminate this difficulty, the authors developed a new method of determining the regulation characteristic, based on the following considerations: Since the regulation characteristic represents the dependence of U_∂ on L_∂, a continuous curve can be plotted during continuous movement of the electrode. At the same time, in order to gain the correct idea of the arc length, the position of the arc column must be checked in two mutually perpendicular planes and the plunge of the arc into the metal prevented. This new method provides for the simultaneous examination of the arc from both sides by means of two Kiev 16S-2 motion picture cameras (16 frames per second) positioned at right angles to each other so that the position of the arc column and the length of the arc can be accurately determined. A corresponding experimental setup was con-

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ACC NR: AP7001837

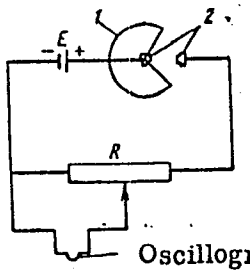
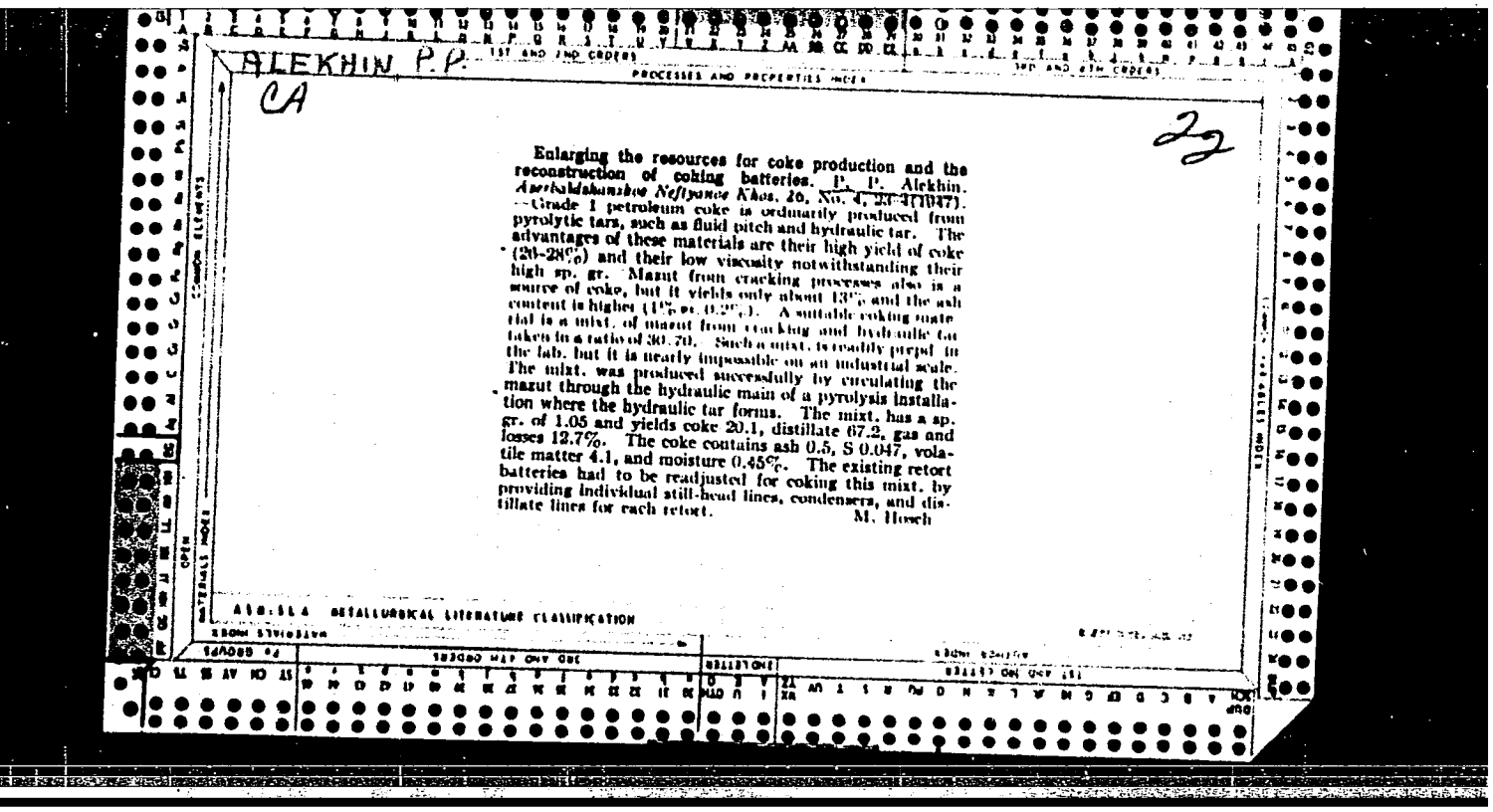


Fig. 2. Design and switching circuit of time mark

angle of 110°. Argon consumption was 140-160 liters/hr. Regulation characteristics were plotted for currents of from 0.7 to 50 a. Findings: processing of the kinograms showed that in the presence of short arcs the arc column is rarely displaced from its axis and the resulting deviation is sufficiently stable in time and readily fixed by means of the kinogram. In subsequent experiments an IP-50 current source was employed to reduce to ~3% the current deviation accompanying the change in arc length from 0.1 to 5.0 mm. It was found that when the arc length is sufficiently short the linear relationship between voltage and arc length no longer applies and the regulation characteristic becomes nonlinear. This nonlinearity clearly manifests itself when the arc length is 0.5 mm and shorter. Orig. art. has: 4 figures.

SUB CODE: 13, 14/ SUBM DATE: none/ ORIG REF: 002

Card 4/4



ALEKHIN P.P.

CA

22

Enlarging the resources for coke production and the reconstruction of coking batteries. P. P. Alekhin. *Azerbaidzhanskoe Neftyanoe Khoz.* 26, No. 4, 23-4(1947).—Grade I petroleum coke is ordinarily produced from pyrolytic tars, such as fluid pitch and hydraulic tar. The advantages of these materials are their high yield of coke (20–28%) and their low viscosity notwithstanding their high sp. gr. Mazut from cracking processes also is a source of coke, but it yields only about 13% and the ash content is higher (1% vs. 0.2%). A suitable coking material is a mixt. of mazut from cracking and hydraulic tar taken in a ratio of 30:70. Such a mixt. is readily prepd in the lab. but it is nearly impossible on an industrial scale. The mixt. was produced successfully by circulating the mazut through the hydraulic main of a pyrolysis installation where the hydraulic tar forms. The mixt. has a sp. gr. of 1.05 and yields coke 20.1, distillate 67.2, gas and losses 12.7%. The coke contains ash 0.5, S 0.047, volatile matter 4.1, and moisture 0.45%. The existing retort batteries had to be readjusted for coking this mixt. by providing individual still-head lines, condensers, and distillate lines for each retort.

M. Hosch

ALEKIN, Oleg A.

ALEKIN, Oleg A. Na Altai k Teletskomu ozeru; putevoi ocherk. Predisl. S.G. Lepnevoi. Leningrad, Tsentr. Gos. gidrologicheskogo in-ta, 1930. 46 p.
DLC: DK771.T4A6

SO: LC, Soviet Geography, Part II, 1951, Unclassified

ALEKIN, O. A.

OSU-A 353

Cornyye Ozera v Okrestrostyakh Teletskogo Ozera:
Mountain Lakes in the Neighborhood of Lake Teletskoye
Issledovaniya Ozer SSSR: Gosudarstvennyy Gidrologicheskiy
Institut, No. 3, 1933, pp. 59-96.
Library of Congress, GB1707-A1I4.
Abstract in German. Description of six small (200-300 met. diameter)
lakes in the Altay Mountains. Sketch maps for them, scale varies,
about 1:4,000.

(40)

OSU-A 357

ALEKIN, O. A.
I Issledovaniyu Pritokov Teletskogo Ozera: On a Investigation of Tributaries to Lake Teletskoye. Issledovaniya Ozer SSSR: Gosudarstvennyy Gidrologicheskiy Institut, No. 7, 1934, pp. 101-125.
Library of Congress, GB1707-A1L4
Part of the report of expedition to this lake. Among rivers described: Ghulymskan, Yan-Chili, Koldor, Kokshi, Kygy.

ALEKIN, O. A.

OSU-A 359

Ozera Katunskikh Al'p: Lakes of the Katun Alps.
Issledovaniya Ozer SSSR: Gosudarstvennyy Gidrologicheskiy
Institut, No. 8, 1934, pp. 153-241.
Library of Congress, GB1707-A1L4
Abstract in German. Description of 15 small lakes in the
Altay mountains, region 49°30' - 50°15' N, 55°00' - 56°30' E.
Sketch maps of these lakes, variable scale 1:16,000 to
1:2,500.

(41)

ALEKIN, O. A.

OSU -A 369

K Izucheniyu Zimnego Gidrologicheskogo Rezhima Teletskogo Ozera: Toward Study of the Winter Hydrological Conditions in Lake Teletskoye.
Issledovaniya Ozer SSSR., No. 9, 1937, pp. 106-133
Library of Congress, GB1707-A1L4
Russian text, abstract in English.
One of the monographs devoted to the study of Lake Teletskoye in the Altay Mountains. General Title: Roboty Teletskoy Ekspeditsii.

(36)

ALEKIN, O.A.
CA

14

The problem of the chemical classification of natural waters. O. A. Alekin. *Voprosy Gidrokhim.* 1946, No. 32, 25-39.—The report discusses (1) some criteria used in some existing systems of classification and (2) a proposal of a new system of classification. With regard to existent systems, A. names 5 different methods: (1) classifications based on the salts occurring in waters (such systems are based on hypothetical salt forms, and are easily employed in the study of brines); (2) classifications on the basis of some special factor giving the waters characteristic properties (e.g., presence of H_2S, Fe, Ra, Li, HO_3^-, etc.; such classifications envelope only a small part of the ground water); (3) classifications based on extent of mineralization; (4) classifications based on the presence of one or several predominant components; and (5) classifications based on the relationships between ions. The Palmer system (*C.A.* 3, 3309) is given as an example of these. A new system of classification proposed by A. is based on the following principles: (1) awkward systems are avoided (thus the proposed system does not establish a universal classification); (2) for the most part, chief attention is directed toward classifying slightly and moderately mineralized waters. For strongly mineralized waters there are to be sep. classifications; (3) there is a combination of the principle of classification on the basis of predominating ions with that of differentiation with regard to the relation between ions; (4) brief symbolization; and (5) classification is to be related to landscapes and to specific geol. conditions. According to the proposed scheme, waters are divided into 3 general classes on the basis of no. of equivs. of the chief anion, the SO_4^{--} class, the HCO_3^- class, and the Cl^- class. Each class is then divided into 3 groups based upon the no. of equivs. of the predominating cation, e.g., Ca^{++}, Mg^{++}, or $Na^+ + K^+$. In turn, each group is sepd. into 3 types, detd. by the relationships between ions. In detg. types, the criteria were those of general hardness, (H = $Ca^{++} + Mg^{++}$), and alky. (Alk = (HCO_3^-) + 2 (CO_3^{--})). For brevity, a system of indexing is used. The HCO_3^- class is designated by C, the SO_4^{--} by S, and the Cl^- by Cl. Groups are designated by chem. symbols as powers of the class symbol. Types are given by Roman nos. as subscripts to the class symbol. As an example of an index, there might be a water having the index, C^{III}_{II}. 30 references. Gladys S. Macy

ALEKIN, O.A.
C.A

Determination of the general hardness of natural waters by the Blacher method. O. A. Alekin and N. M. Andreeva. *Vopросy Gidrokhim.* (Gosudarst. *Gidrol. Inst.*) 1946, No. 32, 40-73.—A report of lab. studies of the conditions of the detn. of general hardness of water by the Blacher method (*C.A.* 5, 2288). The Blacher method dets. only that hardness caused by the alkali earth metals. For natural waters, however, this is practically equiv. to the general hardness. The method of investigation consisted in accurate titration of artificial solns. having different contents of Ba^{++}, Ca^{++}, Mg^{++}, and certain combinations of their mixts. For each salt, solns. of 0.02 *N* were prepd. and were suitably dild. as required. For the titrations, burets of 15-ml. capacity were used. They could be read to 0.01 ml. The titrations were carried out potentiometrically. The Compton electrometer system employed had a sensitivity of 10^{-11} amp. The app. was sensitive to a change of about 0.02 pH unit. Potassium palmitate was used as titrating agent. Since there was consumption of potassium palmitate caused by increasing pH up to the end point, corrections had to be applied in the titrations. For solns. with Ba^{++}, Ca^{++}, and Ca^{++} + Mg^{++} this amounted to 0.12 ml. of the 0.1 *N* titrating soln., but for solns. with Mg^{++} it was only 0.06 ml. The sharpness of color given by phenolphthalein was impaired by potassium oleate, but not by potassium stearate or palmitate. For detn. of hardness above 2 mg.-equivs., the accuracy of the method was within the limits ±1%. Only with less hardness, did it decrease to ±2%. Electrometric curves are shown for: (1) titration of Ca^{++} and Mg^{++} soln. by potassium palmitate under different conditions of prepn. of sample, (2) titration of Mg^{++} soln. at different initial pH values, (3) titration of Ba^{++} solns. by different solns. of the potassium salts of fatty acids. Also there are curves showing the change of elec. cond. of distd. water as the CO_2 is removed from it by blowing air through it. A curve showing the hydrolysis of potassium palmitate by addn. of it to 100 ml. of distd. water with different contents of alc. and glycerol is provided. There are tabulated results for the detns. of hardness of water by the Blacher method. Fifty references.

Gladys S. Macy

ALEKIN, O.A.

Determination of the nitrate ion by the Noll method. O. A. Alekin and R. N. Chernovskaya. *Voprosy Gidrokhim. (Sredneaziat. Gidrol. Inst.)* 1946, No. 32, 74-80). To clarify certain points concerning the use of the brucine method of Noll (*C.A.* 39, 3864[1]) for detg. nitrate ion in freshwaters the following points were studied: (1) establishment of a min. quant. of water for the detn., (2) conditions of treatment of the water with brucine, (3) the time of reaction of the brucine and nitrate solns., and (4) the proportionality of the color change with change of nitrate content. The source of nitrate for the expts. was a soln. of KNO_3 made up in the lab. Results were expressed by the ratio of the columns of liquids in the colorimeter cylinders at the time when the colors were matched. Five cc. was found to be the min. amt. of water with which to start a detn. It was learned that best results were obtained by detn. of nitrate on samples contg. from 6 to 50 mg. l. of NO_3^-. Conditions of the analyses had to be kept uniform. For instance, there had to be uniformity as to type of containers used for the reaction and the same pipet was used for introducing the sulfuric acid soln. of brucine into the samples. Also the reaction times had to be the same in any series of samples for which comparable results were expected. All the conditions studied were suitably illustrated by tables of data obtained from the expts.

Gladys S. Macy

CA

ALEKIN, O.A.

14

Method for determination of the oxidizability of water. O. A. Alekin and O. K. Sokolova. *Voprosy Gidrokhim. (Gosudarst. Gidrol. Inst.)* **1946**, No. 32, 81-6.--A report of an investigation the purpose of which was to study conditions detg. the oxidizability of naturally colored waters by the Kubelya-Timan method, and to improve the accuracy of this method by introducing corrections. The extent of natural color of a water sample was measured in degrees on the Pt-Co scale, then $KMnO_4$ soln. was added to oxidize the org. material responsible for the initial color. It was found by expt. that $n = 0.25\ C°$, where n is the no. of ml. of 0.01 N $KMnO_4$ soln. and $C°$ is the extent of color on the Pt-Co scale. In a series of water samples there is no entirely proportional relationship among extent of color, amt. of org. material, and magnitude of oxidizability, because of variations in extent of leaching and compn. of the org. complexes in the water. The larger the excess of $KMnO_4$, the greater is the oxidizability, because by boiling in the presence of org. material, $KMnO_4$ decomposes spontaneously forming MnO_2, which causes further decompn., and thus some of its effectiveness as an oxidizing agent is lost. The "oxidizability" of distd. water is negligible. Tables of data illustrated the relationships found.

Gladys S. Macy

ALEKIN, O.A.

CA

14

Change of the content of oxygen in water samples under different conditions of storage O. A. Alekin and P. P. Vorobkov. *Voprosy Gidrokhim. (Gosudarst. Gidrol. Inst.)* 1940, No. 32, 98-110.—A study of the effect of different conditions of storage of water samples on their O content. The chief problems involved were those of what preservatives to use and whether to store samples under acid or alk. conditions. For the exptl. work water samples were taken from the surface of the Neva River. Expts. were made to det.: (1) final quantity of O after storage of the samples in ordinary flasks and in hermetically sealed flasks; (2) change in O content in samples of distd. water kept in the air and beneath water; (3) losses of O in samples of distd. water stored at increased temps., in comparison with the temps. *in situ*; (4) change of O content in Neva River water samples during storage in unpreserved and preserved condition at *in situ* temps. and at 18-20°; (5) influence of preservatives on microorganisms; (6) activity of $HgCl_2$ soln. as a preservative; and (7) change in O during storage of sample in acid and alk. media. The O contents were detd. by the Winkler method. The preservatives tried were xylene, chloroform, and $HgCl_2$. It was concluded that the best of these was $HgCl_2$. It was also stated that the loss of unfixed O from water samples occurs because of escape of O to the atm. and biol. consumption of O by microorganisms. Losses of O to the atm. occurred only when the samples were stored at temps. higher than the temps. at which they were taken. It was learned that samples should be stored under alk. conditions if the O content is to be detd. by the Winkler method. Tables of data obtained from these expts. are included.

Gladys S. Macy

ALEKIN, O. A.

CA

14

Use of bathometers of the simplest construction for taking water samples for chemical analysis. O. A. Alekin.—*Voprosy Gidrokhim. (Gosudarst. Gidrol. Inst.)* 1940, No. 32, 117–25.—A crit. evaluation of the characteristics of some bathometers of simplest arrangement. Their chief advantages seem to be: (1) low cost, (2) simplicity of arrangement, (3) the possibility of using ordinary thermometers in them. Errors in observations involving use of these bathometers usually arise from (1) the contact of the water with air in the bathometer and (2) a suction action of the bathometer during its filling with water. Especially when the water sample is to be analyzed for gases does the contact of water with air in the bathometer introduce error. Requirements set forth for a bathometer are as follows. It should: (1) eliminate the possibility of contact of water with air and should not produce a suction action, (2) "cut" the water during immersion, (3) not turn over, (4) have a small height or have several stopcocks on its frame, (5) have an accurate deep-water thermometer, and (6) possess portability and simplicity of operation. Two tables of data are included. One table gives a comparison of results obtained by four different types of bathometer at different depths and temps. The second table gives results obtained with the Voronkov bathometer at two different depths and during fall and summer seasons. Results are expressed in mg. of O_2 per l. of water.

Gladys S. Macy

ALEKIN, O.A.

"Problem Concerning the Origin of the Salt Composition of the Water of the Aral Sea," No 4, pp 65-72.
(Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

ALEKIN O. A.

"Hydrochemistry of the Rivers of the USSR" Part II, Trudy GGI, No 10 (64), Gidrometeoizdat, Leningrad, 1948, 184 pages

SO: U-3039, 11 Mar 1953

USSR/Hydrology - Hydrochemistry Mar/Apr 48
Corrosion

166T36

"Characteristics Governing the Corrosive Action of River Waters of the USSR," O. A. Alekin, Hydrochem Div, State Hydrol Inst

"Meteorol i Gidrol" No 2, pp 60-69

Generalizes available data on chemical composition of river waters for entire USSR with respect to their corrosive action on concrete. Deleterious action of water on concrete is characterized by following types of corrosion: (1) sulfate and magnesian corrosion, (2) leaching of calcium

166T36

USSR/Hydrology - Hydrochemistry (Contd) Mar/Apr 48

hydroxide, and (3) carbonate corrosion. Maps and text detail distribution and characteristics of "aggressive" river waters in USSR. Submitted 6 Jan 48.

166T36

ALEKIN, O. A.

"Hydrochemical Classification of Rivers in the USSR", Trudy GGI, No 4 (38), 1948 (209-224)

SO: U-3039, 11 Mar 1953

BULLETIN O. T.

"Distribution plan for Hydrochemical Observation Points in the Hydrological Network of Stations of the Hydrometeorological Service," Tsudy GGI, No. 11 (65) 1948 (32-37)

SO: U-3039, 11 Mar 1953

1. ALEKIN, O.A.

2. USSR (600)

4. Science

7. Hydrochemistry. Leningrad, Gidrometeoizdat, 1952

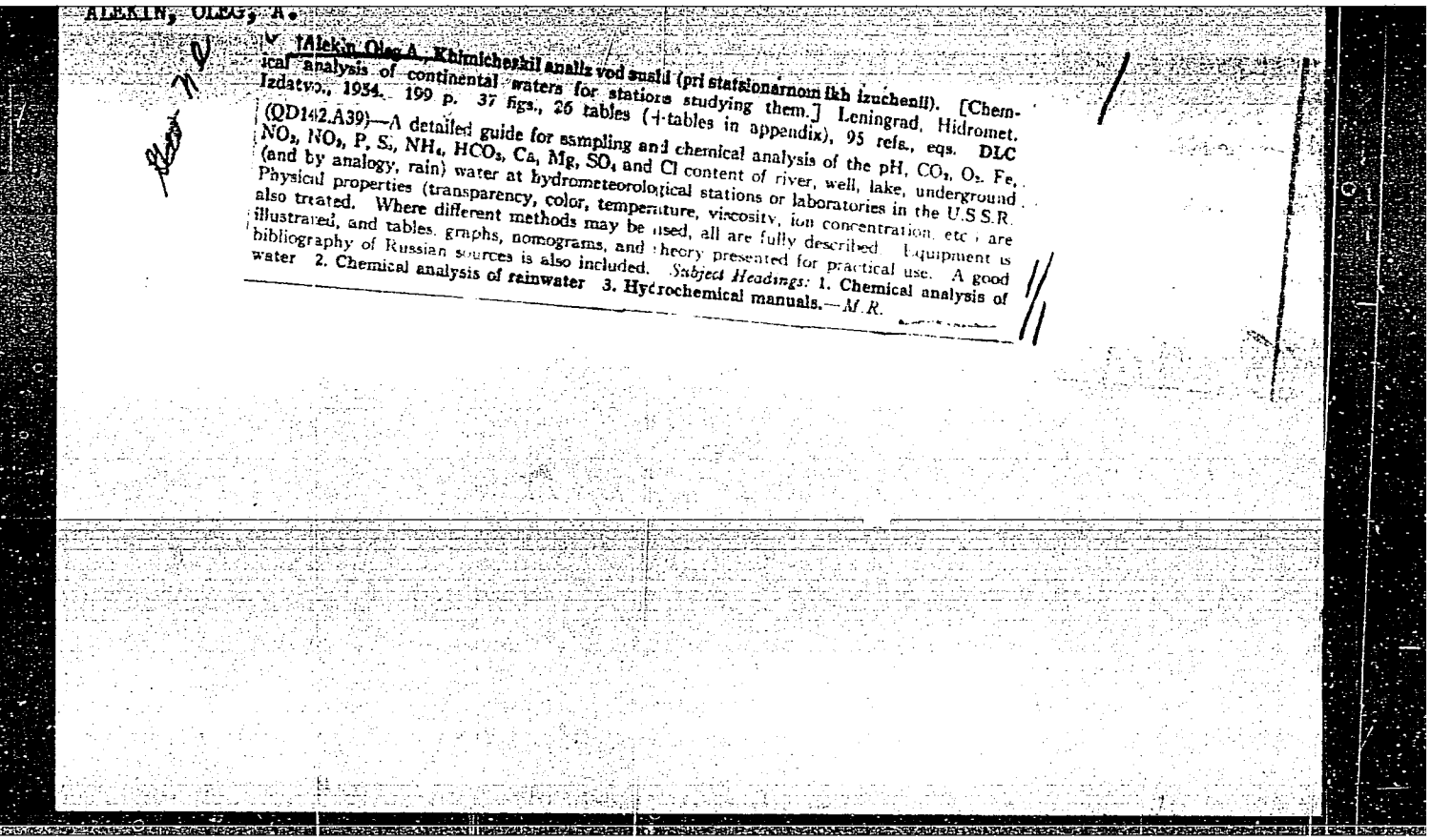
9. Monthly List of Russian Accessions, Library of Congress, February, 1953. Unclassifeid.

ALEKIN, Oleg A.

[Principles of hydrochemistry] Osnovy gidrokhimii. Leningrad, Gidrometeorologicheskoe izd-vo, 1953. 295 p. (MLRA 7:6)
(Water--Composition)

ALEKIN, O.A., professor; KRYUKOV, P.A., kandidat khimicheskikh nauk; KONOVALOV, G.S., kandidat khimicheskikh nauk.

Conference on hydrochemistry and discussion of problems concerning the composition of natural waters. Vest.AN SSSR 23 no.9:82-84 S '53. (MLRA 6:10)
(Water--Analysis)



ALEKIN, OLEG; A.

Alekin, Oleg A., Khimicheskii analiz vod sushi (pri statsionarnom ikh izuchenii). [Chemical analysis of continental waters for stations studying them.] Leningrad, Hidromet. Izdatvo., 1954. 199 p. 37 figs., 26 tables (4 tables in appendix), 95 refs., eqs. DLC (QD142.A39)—A detailed guide for sampling and chemical analysis of the pH, CO_2, O_2, Fe, NO_2, NO_3, P, S, NH_4, HCO_3, Ca, Mg, SO_4 and Cl content of river, well, lake, underground (and by analogy, rain) water at hydrometeorological stations or laboratories in the U.S.S.R. Physical properties (transparency, color, temperature, viscosity, ion concentration, etc.) are also treated. Where different methods may be used, all are fully described. Equipment is illustrated, and tables, graphs, nomograms, and theory presented for practical use. A good bibliography of Russian sources is also included. *Subject Headings:* 1. Chemical analysis of water 2. Chemical analysis of rainwater 3. Hydrochemical manuals.—*M.R.*

ALEKIN O.A.

A simplified method of calculating the activity coefficient in investigating natural waters. O. A. Alekin (Hydrochem. Inst., Acad. Sci. U.S.S.R., Novocherkassk). *Gidrokhim. Materialy* 22, 87–9(1954).—In studies of chem. equilibriums in natural waters the value of the ionic concn. must be calcd. and from it the corresponding activity coeff. The first value is calcd. by formula (1) $\Gamma = c_1z_1^2 + c_2z_2^2 + \ldots c_nz^2$, where $c_1, c_2 \ldots c_n$ represent concn. of individual ions (moles/l.) and $z_1, z_2 \ldots z_n$ represent the charges of the corresponding ions. To calc. the activity coeff., the formula in the theory of strong electrolytes is used: $-\log f \pm = [z_1z_2A\sqrt{\mu}/(1 + ab\sqrt{\mu})] - c\mu$ (z_i), where f is the activity coeff., z the charge, μ ionic strength of the soln. equal to one half the ionic concn. Γ ($\Gamma = 2\mu$). This formula can be represented for dil. soln. with arbitrarily accepted ion diam. $a = 3 \times 10^{-8}$ for the av. activity coeff. of ions of different valency as follows: $\log f = 0.5\ [z^2\sqrt{\mu}/(1 + \sqrt{\mu})]$. Frequently, other variations of formula 2 are made. Thus, when the diam. of ion $a = 4.2 \times 10^{-8}$, $\log f = -0.5\ [z^2\sqrt{\mu}/(1 + \sqrt{2\mu})]$. A simpler formula used is: $\log f = 0.298 \times z^2\sqrt{\Gamma}$. By these formulas the ionic concn. can be calcd. much more readily in the water under study with the value of ionic concn. or even directly with the activity coeff. The application of these formulas is demonstrated. J. S. J.

ALEKIN, O.A., redaktor; ALEKSEYEVA, T.V., tekhnicheskiy redaktor

[Modern methods of chemical analysis of natural water] Sovremennye metody khimicheskogo analiza prirodnoi vody. Moskva, Izd-vo Akademii nauk SSSR, 1955. 105 p. (MIRA 8:8)

1. Chlen-korrespondent AN SSSR (for Alekseyeva). 2. Akademiya nauk SSSR. Gidrokhimicheskiy institut, Novocherkassk.
(Water--Analysis)

ALEKIN, O.A.

Opening address of the Seventh Hydrochemical Conference, May 10, 1953. Gidrokhim.mat. 24:5-6 '55. (MLRA 9:4)
(Water, Underground) (Water--Analysis)

ALEKIN, O. A.

USSR/Cosmichemistry - Geochemistry. Hydrochemistry D.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4197

Author : Alekin, O A.
Title : Introductory Address on Opening of the Discussion Concerning the Formation of the Composition of Natural Waters

Orig Pub : Gidrokhim. materialy, 1955, 24, 75-77

Abstract : No abstract.

Card 1/1 - 84 -

ALEKIN, O.A.; MORICHEVA, N.P.

The origin and future of the ionic comparition of water of the Aral Sea. Gidrokhim.mat. 25:3-15 '55. (MLRA 9:6)

1.Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
(Aral Sea--Water)

ALEKIN, O. A.

USSR/Chemistry - Conferences

Card 1/1 Pub. 124 - 19/25

Authors : Alekin, O. A., Memb. Corresp., Acad. of Sc., USSR; Datsko, V. G., Dr. of Chem. Sc.; and Konovalov, G. S., Cand. of Chem. Sc.

Title : Important problems of hydrochemistry

Periodical : Vest. AN SSSR 25/12, 82-83, Dec 1955

Abstract : Minutes are presented from the 19-th All-Union Hydrochemical Conference held in Novocherkask during May 8-13, 1955. The hydrochemical problems discussed and the resolutions adopted are listed.

Institution : .....

Submitted : .....

ALEKIN, O.A.

USSR/Chemistry--Natural waters

Card 1/1 Pub. 86--4/39

Authors : Alekin, O. A., Mem. Corr. Acad. Sc. USSR

Title : The chemistry of natural waters

Periodical : Priroda 44/1, 25--33, Jan 1955

Abstract : The fact that natural waters always contain gases and minerals in solution, which are necessary to the existence of aquatic life and affect the usefulness of the water for agricultural and industrial purposes and for individual consumption, is taken as a basis for studies conducted by various institutions. Over 50 different elements have thus been found in water. The results of analyses made by various institutions are given and also compiled in the form of a map showing the proportions and kind of extraneous substances in waters according to the region where found. Tables; graphs; map.

Institution : .....

Submitted : .....

FILATOV, K.V.; ALEKIN, O.A., otvetstvennyy redaktor; KOF, M.I., redaktor izdatel'stva; SHEVCHENKO, G.N., tekhnicheskiy redaktor

[Gravitational hypothesis of the chemical composition of underground waters in platform depressions] Gravitatsionnaia gipoteza formirovaniia khimicheskogo sostava podzemnykh vod platformennykh depressii. Moskva, Izd-vo Akademii nauk SSSR, 1956. 207 p. (MLRA 9:7)

1. Chlen-korrespondent Akademii nauk SSSR (for Alekin)
(Water, Underground)

ALEKIN, O. A.

Category: USSR

D

Abs Jour: R Zh--Kh, No 3, 1957, 7878

Author : Alekin, O. A., corr.-mbr., AS USSR; Datsko, V. G., and Knovalov, G. S.
Inst :
Title : The Hydrochemistry of Reservoirs in Connection with Hydrotechnic Construction

Orig Pub: Vestn. AN SSSR, 1956, No 8, 110-111

Abstract: No abstract.

Card : 1/1

-52-

ALEKIN, O.A.; TARASOV, M.N.

Origin of the chemical composition of lake Balkhash water. Dokl. AN SSSR 109 no.5:986-989 Ag. 1956. (MLRA 9:10)

1. Chlen-korrespondent Akademii nauk SSSR(for Alekin).
(Balkhash, Lake--Water--Analysis)

ALEKIN, O.A.

LAZAREV, Konstantin Grigor'yevich; ALEKIN, O.A., otvetstvennyy red.; VASSERBERG, V.E., red.izd-va; PRUSAKOVA, T.A., tekhn.red.

[Hydrochemical aspects of the lowland course of the Amu Darya River] Gidrokhimicheskii ocherk ravninnoi chasti techeniia reki Amu-Dar'i. Moskva, Izd-vo Akad.nauk SSSR, 1957. 105 p. (MIRA 11:1)

1. Chlen-korrespondent AN SSSR (for Alekin).
(Amu Darya River)

ALEKIN, O.A.; MORICHEVA, N.P.

Carbonate-calcium equilibrium in the water of Volga. Gidrokhim. mat. 26:71-96 '57. (MLRA 10:8)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
(Calcium carbonate) (Volga River--Water--Analysis)

ALEKIN, O.A.; TARASOV, M.N.

Hydrochemistry of Lake Balkhash. Gidrokhim. mat. 26:144-162 '57.
(MLRA 10:8)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
(Balkhash, Lake--Water--Composition)

ALEKIN, O. A.

AUTHORS: Alekin, O. A., Corresponding Member AN USSR, 30-8-28/37
Datsko, V. G., Doctor of Chemistry, Konovalov, G. S., Candidate of Chemical Sciences.

TITLE: The Development of the Hydrochemical Research Methods and their Tasks (Zadachi razvitiya metodov gidrokhimicheskikh issledovaniy prirodnykh vod.)

PERIODICAL Vestnik Akademii Nauk SSSR, 1957, Vol. 27, Nr 8, pp. 104-105 (USSR)

ABSTRACT: In May 1957, the XI. Union Conference of scientists dealing with hydrochemistry took place at Novocherkassk, which was attended by more than 200 representatives of scientific institutes of the AN. The participants dealt with problems concerning the methods of the aforementioned research work upon which ever increasing demands are being made. Great interest was aroused by a review of the methods employed in marine hydrochemistry, because it is intended to use this material (the result of the work performed) in the 3rd geophysical year. Other reviews dealt with the methods of concentration and determination of microelements in open waters. It was stated that apparatus and devices must be improved,

Card 1/2

AUTHORS: Alekin, O. A., Corresponding Member of the AS USSR, 20- 114-4-19/63
~~Brazhnikova, L.~~ V.

TITLE: New Data on the Drainage of Materials in Solution From the Territory of the USSR (Novyye dannyye po stoku rastvorennykh veshchestv s territorii SSSR)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 748-750 (USSR)

ABSTRACT: The entire drainage of materials in solution is subdivided into the drainage of organic and mineral substances. The drainage of mineral substances is subdivided into the drainage of colloidal substances and of ions. The major portion of the entire drainage consists of the drainage of ions and its study is of great importance for the knowledge of erosion- and accumulation-processes on the surface of the earth. Reference is made to some preliminary works on this subject. The material of facts accumulated during recent years on the hydrochemistry of large rivers made another calculation of the drainage of ions possible. These data were collected by the network of hydrological stations of the Hydrometerological Service of the USSR up to 1955. Various data found in publications were also found. The most data were obtained for large rivers, data on medium and small rivers are scarce. Furthermore the data on the European

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ALEKIN, O.A.

20-5-40/60

AUTHOR ALEKIN, O.A., Corresponding Member of the Academy,
BRAZHNIKOVA, L.V.

TITLE New Data Concerning the Average Composition of River Water for the Territory of the U.S.S.R.
(Novyye dannyye o srednem sostave rechnoy vody dlya territorii SSSR, -Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 5, pp 1062-1065 (U.S.S.R.)

ABSTRACT The annual average chemical composition of the water of a river basin represents an important characteristic. It comprises individual peculiarities of the composition and regime of smaller parts of the basin. This value, calculated on the basis of several years' data on the chemistry and drift of the river, characterizes the chemical composition of water. The average river-water composition is therefore for larger basins within a certain period of time a more or less stable value of great geochemical importance. The values of several years for ocean basins were calculated in the U.S.S.R. in 1951; during recent years they were defined more precisely by ion drift. Average values of the mineralization of river water of the ocean basins as well as of individual rivers reflect general regularities of the hydrochemical zone. Mineralization is lowest for the basin of the Polar Sea (105,2 mg/liter) and especially for the Pacific (52,4 mg/liter), their water-collecting areas being considerably moistened and the bottoms washed out by centuries of lixiviation. The difference in favor of the Frozen Ocean is caused by

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New Data Concerning the Average Composition of River Water for the Territory of the U.S.S.R.

ter is with regard to its origin connected with the precipitations. More, than that, the content of SO_4''-, Cl'-and Na-ions surpasses even in concentrated (i.e. exposed to evaporation) atmospheric waters their content in river water. This conclusion can, however, not be fully accepted. Such considerable amounts of salt as come into a water-collecting basin together with the precipitations have induced many investigators to consider the precipitations as the determinant factor for the increasing salt-content of the bottom and in the mineralization of surface waters. Without denying the essential importance of precipitations for the formation of surface waters, some circumstances must be mentioned which reduce that importance. In the atmosphere there occur, beside soluble matter (aerosols), suspensions of aeolian dust of local origin in the lower layers. The usual collection method of the precipitations and the mentioned suspensions does not make it possible to separate them. Therefore the latter, whether in a dry state or with the rain, enter into the measurement containers. But in falling down to the earth they might have a different fate. "Transit" salts of this kind can be displaced by the wind several times a year without having had an actual influence on the ion drift of the river. Thus there originates an exaggerated idea on the amount of salts falling out with precipitation and on their participation in the mineralization of the river water. The true share of these

ALEKIN, O.A.

AUTHORS: Alekin, O. A., Corresponding Member of the AN USSR, 20-6-31/47
Moricheva, N. P.

TITLE: On the Problem of the Stability of the Carbonate System in Natural Waters (K voprosu o stabil'nosti karbonatnoy sistemy v prirodnykh vodakh).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 6, pp. 1030-1033 (USSR)

ABSTRACT: The carbonate system which contains Co_2, H_2CO_3, HCO_3^-, CO_3^{--}, Ca^{++} and H^+ as chief components represents the most important system among the chemical equilibriums in natural, especially in fresh waters. It determines the precipitation of $CaCO_3$. The chief conditions of the stability of this system are 1) the equilibrium of CO_2 dissolved in water with the CO_2 above the solution and 2) the corresponding of the content of Ca^{++}- and CO_3^{--}- to the product of the activities $(Ca^{++}).(CO_3^{--}) = S$ under given physical conditions and to the ionic strength of the solution. The natural factors determining these two conditions are variable, therefore the equilibrium of the carbonate system may be shifted to this or that side. The quantity of the dissolved CO_2 is especially easily modified and consequently also the content of HCO'_3 and CO''_3,; Thus 2 values connected with each other can characterize the deviation from a stable equilibrium: CO_2 in an excess quantity and the degree

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But the organic substance of rotten river plankton hardly slows down the precipitation of $CaCO_3$. It seems that the humous substances of plant origin are most effective here. It is known that some of them, such as the humic acids, form little soluble compounds with calcium and should therefore be easily absorbed at the surface of $CaCO_3$. Similar results were obtained with peptone (figure 2). The antagonism occurring under natural conditions between the content of humous substances and the mineralization of water may probably to a certain degree be explained by the above-mentioned adsorption. This effect may also be expected of other anions, e.g. from those of orthophosphoric and orthosilicic acid. There are 2 figures, 2 tables, and 6 references, 3 of which are Slavic.

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URYVAYEV, V.A., kand.tekhn.nauk, otv.red.; ALEKIN, O.A., red.; VELIKANOV, M.A., red.; BLIZNYAK, Ye.V., red.; BORSUK, O.N., kand.geogr.nauk, red.; DAVYDOV, L.K., red.; DOMANITSKIY, A.P., red.; KALININ, G.P., red.; KRITSKIY, S.N., red.; KUDELIN, B.I., red.; MANOIM, L.F., red.; MENKEL', M.F., red.; ORLOV, B.P., red.; POPOV, I.V., red.; PROSKURYAKOV, A.K., red.; SOKOLOVSKIY, D.L., red.; SPENGLER, O.A., red.; CHEBOTAREV, A.I., red.; CHERKAVSKIY, S.K., red.; GROSMAN, R.V., red.; SERGEYEV, A.N., tekhn.red.

[Proceedings of the third All-Union Hydrological Congress] Vsesoiuznyi gidrologicheskii s"ezd. 3rd, Leningrad, 1957. Trudy. Leningrad, gidrometeor. izd-vo. Vol.1 [General information, decisions, and papers presented in plenary sessions] Obshchie svedeniia, resheniia i plenarnye doklady. 1958. 242 p. (MIRA 12:1)
(Hydrology--Congresses)

AUTHORS: Alekin, O. A., Datsko, V. G., Brazhnikova, L. V. SOV/30-58-8-25/43

TITLE: Investigation of Chemical Processes in Natural Waters (Izucheniye khimicheskikh protsessov v prirodnykh vodakh) Conference in Novocherkassk (Soveshchaniye v Novocherkasske)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 8, pp. 119-120 (USSR)

ABSTRACT: The 12th hydrochemical conference was held in Novocherkassk from May 6-11. It had been called by the Gidrokhimicheskiy institut (Hydrochemical Institute). It was attended by about 250 persons: representatives of scientific research institutes, of universities, of planning and economic organizations of a number of republics and regions of the USSR. The main subjects discussed in the conference were investigations of the interaction of natural waters with rock, soil and silt. Such investigations were considered to be particularly interesting which attempted to give a model of the formation of natural waters. A considerable number of reports dealt with the investigation of the carbonate equilibrium in natural waters and of the factors exerting an influence on this process. Reports were also given on research dealing with the dynamics of or-

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ganic substances in natural waters. The methods used in the separation of organic substances from natural waters and in the investigation of their composition were found to be imperfect. The investigation of the qualitative composition of organic substances found in natural waters should be intensified by reverting to the use of spectrophotometry in the infrared range, and to that of chromatography. The importance of horizontal and vertical shifting of waters for physico-chemical and biological processes is also shown. The necessity of devoting more attention to the investigation of the relation between hydrochemical processes with hydrometeorological and hydrological conditions was emphasized. Reports were also given on research dealing with the regulation of rivers connected with the construction of hydroelectrical power plants and other hydrotechnical constructions.

AUTHOR: Alekin, O. A., Corresponding Member, AS USSR, Moricheva, N. P. 20-119-2-37/60

TITLE: Content of Organic Matter in Natural Waters, as Affected by the Carbonate System (Vliyaniye karbonatnoy sistemy v prirodnykh vodakh na soderzhaniye organicheskikh veshchestv)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 2, pp. 322-325 (USSR)

ABSTRACT: The stabilizing effect of the organic matter on the carbonate system in natural waters was observed in one of the previous works carried out by the authors (ref 1). Their content of organic matters of high molecular weight, mainly of humus origin are easily sorbed by calcium carbonate on the surface of the micro crystals at the moment of their formation and delay, their growth and their precipitation into the sediment. Due to this fact the oversaturated calcium carbonate solutions gain a certain stability and may exist under natural conditions for a considerable period of time. However, there exists an inverse influence of calcium carbonate precipitating from the solution on the content of organic matters in natural waters. The humus matters prevent the

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content of organic substance. Results: As it was expected the presence of $Ca(HCO_3)_2$ accelerates decolorization of the water. Without this salt, color nearly did not change at all in distilled water. At a content of $Ca(HCO_3)$ within 4-8 mg-equ/liter and with the lacking of other salts the solution decolorizes after two months by about the double (fig. 1). The more intensive the color was in the beginning the more the percentage of the separation of the organic matters decreases. The results of the influence of foreign ions on the stability of the organic substance were unexpected. According to technical litterature (refs 2,3) it is assumed that the organic substances floated into the sea by the rivers are coagulated only under the influence of the ions contained abundantly in the sea. This opinion was not confirmed by the experiments carried out by the authors. The increasing salt content did not considerably influence the color. On the contrary, The water was colored more intensively at a complete lacking of sea salts (fig. 2).

 This is explained by the fact that the increased salt

Content of Organic Matter in Natural Waters, as Affected by the Carbonate System 20-119-2-37/60

accordance with the opinions suggested here, by a stronger saturation of the equatorial waters with calcium carbonate. Moreover, the intensity of the photosynthesis is much higher in the South.
There are 2 figures and 8 references, 5 of which are Soviet.

ASSOCIATION: Gidrokhimicheskiy institut Akademii nauk SSSR (Hydrochemical Institute, AS USSR)

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and theoretical research has be to coordinated with solving the problems in practice. There is 1 photo.

ASSOCIATION: Akademiya nauk SSSR (AS USSR) Gidrokhimicheskiy institut Akademii nauk SSSR (Novocherkassk) (Institute of Hydrochemistry of the AS USSR (Novocherkassk))

ALEKIN, O.A.

Brief outline of the development of hydrochemistry in the U.S.S.R. during the past 40 years. Gidrokhim.mat. 28:3-11 '59.
(MIRA 12:9)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, g.Novocherkassk.
(Water--Analysis)

ALEKIN, O.A.; MORICHEVA, N.P.

Stability of the carbonate equilibrium in river water as exemplified by the Don River. Gidrokhim.mat. 29:39-53 '59.
(MIRA 13:5)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
(Calcium carbonate) (Don River--Water--Analysis)

3(9)

AUTHORS: Alekin, O. A., Corresponding Member, AS USSR, SOV/20-126-2-19/64
Moricheva, N. P.

TITLE: The Saturation With Calcium Carbonate of the Waters of Estuaries (Nasyshchennost' karbonatom kal'tsiya vody estuariyev)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 2, pp 295-298 (USSR)

ABSTRACT: In the course of earlier papers (Refs 1,2) the authors pointed out the oversaturation of the water of numerous rivers by $CaCO_3$. The degree of this oversaturation is often very considerable. The state of the carbonate system in estuaries is of considerable importance. The authors carried out experimental investigations of carbonate equilibrium in the Taganrog Bay in July 1958. At the same time its stability was investigated under laboratory conditions, in which case the same methods were employed as were used in the aforementioned earlier investigations. Observations were made at 10 points extending from the river Don to the outlet of Taganrog Bay. The degree to which river water was mixed with sea water may be determined from the Cl content, which fluctuated between 0.05 and 5.29 °/oo. In the water of the river Don oversaturation with $CaCO_3$ (during the investigations) attained very high values (17.7-fold). However,

already in the case of a relatively low mixture with sea water (Cl=0.427°/oo), the degree of oversaturation decreases by nearly 50%. Further mixing with sea water leads to a slower but uninterrupted decrease of oversaturation. The decrease of $CaCO_3$ oversaturation of water is not due to river water being mixed with sea water (which, in this case, has a low degree of saturation with $CaCO_3$), but to the shifting of the entire carbonate equilibrium. On this occasion, the system is subjected to the influence of numerous factors, the most important of which is the increase of $CaCO_3$ solubility with an increase of the ionic force (ionnaya sila) of the solution. These as well as other results discussed in the present paper lead to the following conclusions: 1) The waters of estuaries have very different degrees of saturation by $CaCO_3$ which depends on saturation by river water. 2) When river water saturated $CaCO_3$ is mixed with sea water, the degree of saturation of the mixed water is reduced. If, however, the river water is not saturated with $CaCO_3$, the saturation of the mixed water increases.

ALEKIN, O.A.; DATSKO, V.G., doktor khimicheskikh nauk; BRAZHNIKOVA, L.V.

Methods for hydrochemical analyses of natural waters. Vest.AN SSSR 30 no.8:121-123 Ag '60. (MIRA 13:8)

1. Chlen-korrespondent AN SSSR (for Alekin).
(Water--Analysis)

TARASOV, Mikhail Nikolayevich; ALEKIN, O.A., otv. red.; BANKVITSER, A.L., red.izd-va; LAUT, V.G., tekhn. red.

[Hydrochemistry of Lake Balkhash] Gidrokhimiia ozera Balkhash] Moskva, Izd-vo Akad.nauk SSSR, 1961. 225 p. (MIRA 15:1)

1. Chlen-korrespondent AN SSSR (for Alekin).
(Balkhash, Lake--Water--Composition)

FEDOROV, N.N., kand.tekhn.nauk; POPOV, I.V., kand.geogr.nauk; BORSUK, O.N., kand.geogr.nauk; GRUSHEVSKIY, M.S., kand.tekhn.nauk; VELIKANOV, M.A., prof., doktor tekhn.nauk, red.(Moskva); URYVAYEV, V.A., otv. red.; ALEKIN, O.A., red.; BLIZNYAK, Ye.V., red. [deceased]; BORSUK, O.N., red.; DAVYDOV, L.K., red.; DOMANITSKIY, A.P., red.; KALININ, G.P., red.; KRITSKIY, S.N., red.; KUDELIN, B.I., red.; MANOIM, L.F., red.; MENKEL', M.F., red.; ORLOV, B.P., red.; PROSKURYAKOV, A.K., red.; SOKOLOVSKIY, D.L., red.; SPENGLER, O.A., red.; CHEBOTAREV, A.I., red.; CHERKOVSKIY, S.K., red.; SHATILINA, M.K., red.; VLADIMIROV, O.G., tekhn.red.

[Transactions of the Third All-Union Hydrological Congress] Trudy III Vsesoiuznogo gidrologicheskogo s"ezda. Vol.5. [Section of Hydrodynamics and River-Bed Evolution] Sektsiia gidrodinamiki i ruslovykh protsessov. 1960. 421 p.

(MIRA 13:11)

1. Vsesoyuznyy gidrologicheskiy s"ezd. 3d, Leningrad, 1957.
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3. Chlen-korrespondent AN SSSR (for Velikanov).

(Hydrology--Congresses)

ALEKIN, O.A.; MORICHEVA, N.P.

Contribution to the study of trace element sorption by the carbonate system of natural waters. Dokl.AN SSSR 133 no.4: 943-946 Ag '60. (MIRA 13:7)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, Novocherkassk.
2. Chlen-korrespondent AN SSSR (for Alekin).
(Calcium carbonate) (Trace elements)
(Sorption) (Water--Composition)

ALEKIN, O.A.; MORICHEVA, N.P.

Changes in the calcium carbonate content of river water during mixing with sea water. Gidrokhim. mat. 31:95-107 '61.
(MIRA 14:3)

1. Gidrokhimicheskiy institut Akademii nauk SSSR, g. Novocherkassk.
(Estuaries) (Water--Composition) (Calcium carbonate)

ALEKIN, O.A.

Place of hydrochemistry in the system of natural sciences.
Gidrokhim. mat. 32:3-11 '61 (MIRA 14:6)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Water--Composition)
(Classification of sciences)

ALEKIN, O.A.; BRAZHNIKOVA, L.V.

A contribution to the study of the runoff of dissolved substances from the land of the globe. Gidrokhim. mat. 32:12-24 '61. (MIRA 14:6)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Water--Composition)
(Runoff)

ALEKIN, O.A.

State and problems of the prediction of water quality. Gidrokhim. mat. 32:64-71 '61. (MIRA 14:6)

1. Gidrokhimicheskiy institut.
(Water--Composition)

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Annual distribution of ion discharge in rivers of the U.S.S.R.
Gidrokhim.mat. 34:12-18 '61. (MIRA 15:2)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Rivers) (Water--Composition)

ALEKIN, O.A.; MORICHEVA, N.P.

Role of organisms in the precipitation of carbonates from natural waters. Gidrokhim.mat. 34:95-106 '61. (MIRA 15:2)

1. Gidrokhimicheskiy institut AN SSSR, Novocherkassk.
(Calcium carbonate) (Sedimentation and deposition)
(Marine biology)

ALEKIN, O.A.; DATSKO, V.G.; BRAZHNIKOVA, L.V.

Fourteenth All-Union Conference on Hydrochemistry. Zhur.VKHO 6 no.1:94 '61. (MIRA 14:3)
(Water—Analysis)

ALEKIN, O.A.; MORICHEVA, N.P.

Withdrawal of calcium carbonate by organisms from the sea water. Dokl. AN SSSR 136 no.6:1454-1457 F '61. (MIRA 14:3)

1. Chlen-korrespondent AN SSSR (for Alekin).
(Sea water)
(Calcium carbonate)

ALEKIN, O.A.; BRAZHNIKOVA, L.V.

Relation between the ionic runoff and the runoff of matter in suspension. Dokl. AN SSSR 146 no.1:203-206 S '62. (MIRA 15:9)

1. Chlen-korrespondent AN SSSR (for Alekin).
(Geochemistry)

O.A. ALEKIN, L.V. BRAZHNIKOVA (USSR)

"Carrying-out by the rivers of dissolved substances from continents and its connection with mechanical erosion of the Earth surface."

Report presented at the Conference on Chemistry of the Earth's Crust, Mowcow, 14-19 Mar 63

VOROB'YEV, Nikolay Ivanovich; ALEKIN, O.A., otv. red.; DRAGUNOV, E.S., red.; YEPIFANOVA, L.V., tekhn. red.; SUSHKOVA, L.A., tekhn. red.

[Characterizing the chemical composition of natural waters by the electrical conductivity method] Primenenie izmereniia elektroprovodnosti dlia kharakteristiki khimicheskogo sostava prirodnykh vod. Moskva, Izd-vo Akad. nauk SSSR, 1963. 97 p. (MIRA 16:5)

1. Chlen-korrespondent Akademii nauk SSSR (for Alekin).
(Water--Composition) (Conductometric analysis)