25856
S/020/61/139/004/016/025
B 103/B206

5.3750

AUTHORS: Nesmeyanov, A. N., Academician, Perevalova, E. G., Gubin, S. P., Nikitina, T. V., Ponomarenko, A. A., and Shilovtseva, L. S.

TITLE: Properties of phenyl ferrocene

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 4, 1961, 888-891

TEXT: The authors investigated: 1) the amino methylation, 2) sulfonation, 3) concurrent (with ferrocene) acetylation, and 4) nitration of phenyl ferrocene. They established that the alkyl group, if linked with the ferrocene ring, facilitates the subsequent electrophilic substitution. In this case, the cyclopentadienyl ring to which the alkyl group is bonded, is more strongly activated. In relation to the ferrocenyl group, the phenyl group is an electron-acceptor group (A. N. Nesmeyanov et al. Ref. 5: DAN, 103, 81 (1955)). These data by the authors were confirmed by M. Rosenblum (J. Am. Chem. Soc., 81, 4530 (1959)): The electrophilic substitution of the hydrogen atoms in the ferrocene ring is deactivated by the phenyl group. 1) Amino methylation. To a mixture of 70 ml of glacial

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Properties of phenyl ferrocene

acetic acid and 4 g of H_3PO_4, cooled to 10°C, 2.25 g (0.019 mole) of tetramethyldiaminoethane is gradually added, and then 4 g (0.015 mole) of phenyl ferrocene. The reaction mass was stirred for 1 hr at room temperature and for 10 hr at 110 - 115°C in a nitrogen current and subsequently diluted with water to the double amount. The ferrocene (1.5 g) which had not entered into reaction was extracted with benzene. 40% NaOH solution was added to the acidic solution, and the formed (N, N-dimethylaminomethyl)-phenyl ferrocene was extracted with ether. After distilling off the ether, 2.6 g of the above-mentioned compound was obtained as a viscous, dark, reddish-brown oil. The yield amounted to 54% of the theoretical one (related to phenyl, ferrocene) and to 86% of the phenyl ferrocene reacted. The final product was distilled in vacuo. Its boiling point was 150-160°C/3 mm Hg; n_D^{20} 1.6315. In the infrared spectrum of the final product, weak absorption bands existed in the range 1000 and 1100 cm^{-1}. From this, the authors assume the formation of a mixture from the hetero- and homoannular isomers. The latter seems to form in small quantities. The methiodide of the final product was produced by addition of CH_3I to

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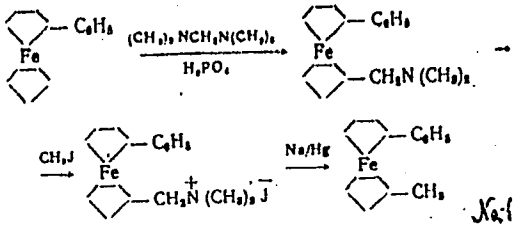
a solution of 3.2 g in absolute CH_3OH (or in benzene) with precipitation after 15 min by a great amount of anhydrous ether. An almost quantitative (4.3 g) amount of methiodide was produced. It is a yellow, crystalline substance with the decomposition point 70 - 75°C. Since in the infrared spectrum of the methiodide which was produced from the distilled final product, absorption at 1000 and 1100 cm^{-1} is missing, the authors conclude that the substituting groups are in various cyclopentadienyl rings. Through reduction of the methiodide by sodium amalgam, the heteroannular 1, 1-methyl-phenyl ferrocene was obtained (see reaction no. 1).



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Properties of phenyl ferrocene

The yield was 1.8 g(71% of the theoretical one). Absorption at 1000 and 1100 cm^{-1} was missing in its infrared spectrum. A free cyclopentadienyl ring can only be proved spectroscopically in the substance which was isolated from the mother liquor. The authors came to the conclusion that the heteroannular isomer was the main component of the mixture produced by amino methylation. Therefore, this reaction mainly occurs in the free cyclopentadienyl ring. 2) To a solution of 10 g (0.038 mole) of phenyl ferrocene in 100 ml of dichloroethane, 10 g (0.060 mole) of freshly prepared dioxane sulfotrioxide was added while cooling with ice. Under the conditions of formation of ferrocene monosulfonic acid, 1', 1 phenyl ferrocene sulfonic acid was obtained.

$C_6H_5C_5H_4FeC_5H_5 \xrightarrow{SO_3\text{-dioxane}} C_6H_5C_5H_4FeC_5H_4SO_3H$. This acid was isolated as lead salt, which crystallizes with 4 water molecules. Absorption at 1000 and 1100 cm^{-1} was here also missing; the phenyl and sulfo groups are therefore in different cyclopentadienyl rings. The formation of heteroannular sulfonic acid is also proof of a lower reactivity of the ring

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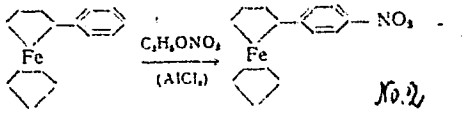
Properties of phenyl ferrocene

linked with phenol. 3) The deactivating effect of the phenyl group on the ferrocenyl ring is specially marked during the Friedel-Crafts reaction. A solution of 1.4 ml of acetyl chloride and 2.66 g of $AlCl_3$ in 10 ml of absolute ether was added in the course of 20 min to a solution of ferrocene (3.72 g) and phenyl ferrocene (5.42 g) in 100 ml of CS_2. All components were used at a molar ratio of 1:1:1:1. The authors obtained acetyl ferrocene only with a yield of 25% of the theoretical one, and a mixture of acetyl phenyl ferrocenes of only 5%, 64% of phenyl ferrocene and 30% of ferrocene being recovered unchanged. From this, the authors conclude that ferrocene may be acetylated more easily than phenyl ferrocene. 4) Phenyl ferrocene was nitrated by means of ethyl nitrate in CS_2 in the presence of $AlCl_3$. The authors obtained a 13% yield (of the theoretical one) of p-nitro-phenyl ferrocene (see reaction no. 2).



No. 2

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S/020/61/139/004/016/025
B103/B206

Properties of phenyl ferrocene

The main quantity of this final product is isolated together with part of the nonreacted phenyl ferrocene in nonoxidized state (and not as a cation). The authors presume that nitration does not take place with the phenyl ferrocene cation but with phenyl ferrocene. The continuance of the ferrocenyl ring under these conditions is noticeable, probably as a consequence of a reduced capability of being oxidized to a cation as compared with ferrocene. Ferrocene itself cannot be nitrated under these conditions. Attempts of the authors to nitrate ferrocene with various other reagents (e. g., nitronium borofluoride) also failed. Only oxidation of ferrocene to the cation which is inert in reactions of the electrophilic substitution, was brought about. There are 9 references: 7 Soviet-bloc and 3 non-Soviet-bloc. One reference to English-language publications is given in the body of the abstract, the another one reads: M. Rosenblum, R. B. Woodward, J. Am. Chem. Soc., 80, 5443 (1958)).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: April 19, 1961

Card 6/6

S/020/62/143/006/016/024
B106/B138

53900

AUTHORS: Gubin, S. P., and Perevalova, E. G.

TITLE: Formal redox potentials of monosubstituted ferrocenes

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 6, 1962, 1351-1354

TEXT: The formal redox potentials of 30 monosubstituted ferrocenes were determined by potentiometric titration with potassium bichromate in a mixture of acetic acid and aqueous perchloric acid. Relative quantitative data were thus obtained on the effect of substituents on the oxidation of the ferrocene nucleus to the ferricinium cation. The determinations were conducted by the method of J. G. Mason and M. Rosenblum (Ref.2: J.Am.Chem. Soc., 82, 4206 (1960)) at 25 ± 0.1°C in nitrogen atmosphere. Table 1 shows the results. The differences of the logarithms of the equilibrium constants for the reactions of substituted and unsubstituted ferrocene were calculated from the corresponding potentials (Column 4, Table 1) and compared with the constants σ^* and σ^o according to Taft (Ref. 10: M. S. N'yumen, Prostranstvennyye effekty v organicheskoy khimii (M. S. Newman, Steric effects in organic chemistry), IL, 1960, 591), and σ_m and

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Formal redox potentials of...

σ_n according to Hammett (Ref. 11: D. H. McDaniel, H. C. Brown, J. Org. Chem., 23, 420 (1958)). No relations have been found to the constants σ^*, σ^o, and σ_m, while there is a (not very good) relation to the constants σ_n. In a diagram (log K/K_o, σ_n), the ferrocenes with the substituents $-OCH_3$, $-OCOCH_3$, $-CH_3$, $-C_2H_5$, iso-C_3H_7 lie on a straight line with $\varrho = -4.23$, on which the ferrocene itself also lies (correlation coefficient 0.985), whereas the ferrocenes with the substituents $-C_6H_5$, $-C_6H_4NO_2$-p, -COOH, $-COOCH_3$, -I, -Cl, -Br lie on a straight line with $\varrho = -7.94$ (correlation coefficient 0.982). In the case of the ferrocenes which lie on the former straight line, the substituents interact with the iron atom by mechanisms of inductive, conjugation and, possibly, field effects, the latter only as far as this effect is reflected by the value of σ_n. In the case of the ferrocenes which lie on the straight line with $\varrho = -7.94$, the substituents interact with the iron atom by the field effect mechanism much more intensely than is reflected by the σ_n values. This agrees with a

Formal redox potentials of...

published statement that hydrogen and alkyl substituents cannot interact with the reaction center by the field effect mechanism (Ref. 9: V. A. Pal'm, Usp. khim., 30, 1069 (1961)). The interaction by the field effect mechanism occurs over a shorter distance, which leads to an increase in the absolute value of ϱ. Academician A. N. Nesmeyanov is thanked for cooperation and advice. There are 1 figure and 1 table. The most important English-language references read as follows: T. Kuwana, D. E. Bublitz, G. Hoh, J. Am. Chem. Soc., 82, 5811 (1960); H. H. Jaffe, Chem. Rev., 53, 191 (1953); D. S. Trifan, R. Baskai, Tetrahedron Letters, 1960, no. 13, 1; J. D. Roberts, R. A. Carboni, J. Am. Chem. Soc., 77, 5554 (1955).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: December 12, 1961, by A. N. Nesmeyanov, Academician

SUBMITTED: November 9, 1961

Formal redox potentials of...

Table 1. Formal redox potentials of monosubstituted ferrocenes $C_5H_5FeC_5H_4X$ (formulas do not take account of changes in the reaction medium).

Legend: (I) E_{f_o}, v (according to a standard calomel electrode); (II) m., °C; (III) $\frac{b., {}^{o}C}{mm\ Hg}$; (IV) under decomposition; [2] calculated from the formula $(E_o^X - E_o^H)/0.0591 = \log K/K_o$; [3] only the primary σ_n values obtained from the dissociation constants of the corresponding p-substituted benzoic acids have been used; [4] the potentials of these compounds differ slightly from published data; the potential differences between ferrocene and phenyl ferrocene, and between ferrocene and p-nitrophenyl ferrocene, are constant within the error limits of the experiment; [5] from published data; [6] the value for the $-COOC_2H_5$ group from published data has been used. In column 2: uзo = iso; μ = m; n = p.

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S/020/62/147/002/015/021
B106/B101

AUTHORS: Perevalova, E. G., Gubin, S. P., Smirnova, S. A., Nesmeyanov, A. N., Academician

TITLE: Redox properties of compounds containing two ferrocenyl groups

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 2, 1962, 384-387

TEXT: The authors studied the effect produced by one ferrocene ring on the redox properties of a second ferrocene ring bound to the first either directly (diferrocenyl) or by groups Y of different conductivity (-Hg-, $-CH_2-$, $-CH_2-CH_2-$, $-CH_2-O-CH_2-$, $-CH_2-N^+(CH_3)_2-CH_2-$). They measured the first and second redox potentials E'_{f_o} and E''_{f_o} (Table 1). The significance of E'_{f_o} and E''_{f_o} is evident from the following scheme:

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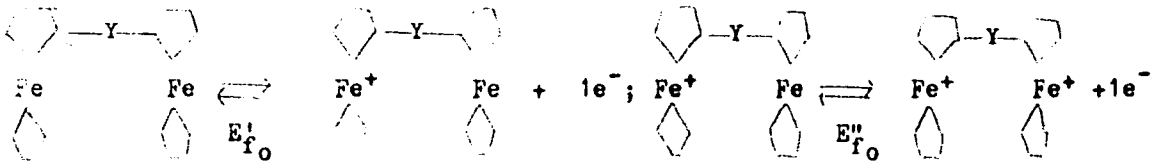
Redox properties of compounds ...



Under the chosen conditions diferrocenyl was oxidized at one Fe atom only. When two ferrocene rings interact, the electron density increases at the ring oxidized. The redox potentials indicate that the methylene group transfers to the other nucleus; hardly any of the electron-donor effect of the ferrocenyl group, whereas the effect of the positively charged ferricinium ion is transferred even across bridges of 3 atoms. The investigations covered also how some substituents in the methyl group of methyl ferrocene affect the redox potentials (Table 2): in this case, too, the effect of electron-acceptor substituents was transferred via the methylene group to a notably greater extent than that of electron-donor substituents. There are 4 figures and 2 tables. The most important English-language references are: R. W. Taft Jr., J. Am. Chem. Soc., 75,

4231 (1953); H. H. Jaffe, Chem. Rev., 53, 191, (1953).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 18, 1962

Table 1. Redox potentials of compounds with two ferrocenyl groups $C_5H_5FeC_5H_4$-Y-$C_5H_4FeC_5H_5$ (in v, related to the standard calomel electrode). Legend: (1) melting point, °C; (2) diferrocenyl; ** obtained by reduction of diferrocenyl ketone; (3) with decomposition.

Table 2. Redox potentials of some monosubstituted ferrocenes $C_5H_5FeC_5H_4CH_2X$. Legend: (1) v, related to the standard calomel electrode; * mean deviation from the E_{f_o} values indicated ±0.003 v

NESMEYANOV, A.N.; KOZLOVSKIY, A.G.; GUBIN, S.P.; PEREVALOVA, E.G.

Protolysis of mercury derivatives of ferrocene. Izv. AN SSSR. Ser. khim. no.3:580 '65. (MIRA 18:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova i Institut elementoorganicheskikh soyedineniy AN SSSR.

L 61652-65 EWT(m)/EPF(c)/EPR/EWP(j)/T/EWA(c) Pc-4/Pr-4/Ps-4
WW/RM

ACCESSION NR: AP5015591 UR/0062/65/000/005/0909/0911
547.13+546.72+543.422+537.561

AUTHOR: Nesmeyanov, A. N.; Perevalova, E. G.; Yur'yeva, L. P.; Gubin, S. P.

TITLE: Oxidation-reduction potentials and ultraviolet and visible absorption spectra of certain homoannular disubstituted ferrocenes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 5, 1965, 909-911

TOPIC TAGS: ferrocene, redox potential, ultraviolet absorption spectrum, homoannular compound, heteroorganic amide, heteroorganic nitrile

ABSTRACT: The redox potentials were determined by oxidative potentiometric titration with $K_2Cr_2O_7$ in the mixture CH_3COOH - $HClO_4$, and were compared with values calculated on the basis of additivity. The largest deviations from additivity were displayed by the 1,2-isomeric amides of alkyl- and phenyl-substituted ferrocenecarboxylic acids. The determination of redox potentials was shown to be a convenient method of determining the structure of homoannular disubstituted ferrocenes in which at least one substituent is conjugated with the five-membered ring. UV and visible absorption spectra of the amides of ferrocenecarboxylic acids showed that the absorption peaks almost coincide, but the absorption inten-

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sity changes considerably from one isomer to another. As in the case of the redox potentials, the lowest absorption intensity, exhibited by the spectrum of the amide of 1,2-ethylferrocenylcarboxylic acid, indicates the presence of steric hindrance (caused by the neighboring ethyl group) in the conjugation between the amide group and the five-membered aromatic ring. In contrast to the amide group, the nitrile group has a linear structure, and its conjugation with the aromatic ring is not affected by the neighboring bulky substituent; for this reason, no appreciable differences are found in the spectra of nitriles of isomeric methyl- and ethylferrocenecarboxylic acids. Changes in the spectra of amides of isomeric phenylferrocenecarboxylic acids from one compound to another are more complex and require further investigations. "We thank L. S. Shilovtseva for providing the methylethyl- and ethylhydroxymethylferrocenes." Orig. art. has: 1 table.

ASSOCIATION: Institut elementoorganicheskikh soyedinenly Akademii nauk SSSR (Institute of Organometallic Compounds, Academy of Sciences, SSSR)

SUBMITTED: 29Jul64 ENCL: 00 SUB CODE: OC

NO REF SOV: 005 OTHER: 005

L 36634-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5001517 S/0020/64/ 59/005/1075/1078

AUTHOR: Gubin, S. P.; Grandberg, K. I.; Perevalova, D. G.; Nesmeyanov, A. N. (Academician)

TITLE: Transannular electronic effects in the ferrocene nucleus. Dissociation constants of substituted ferrocene carboxylic acids

SOURCE: AN SSSR, Doklady, v. 159, no. 5, 1964, 1075-1078

TOPIC TAGS: ferrocenecarboxylic acid, dissociation constant, substituent effect, induction effect

ABSTRACT: In this work an investigation was made of the transmission of electronic effects in ferrocene using ferrocenecarboxylic acids in which the substituent and the reaction center are located in different rings. The apparent dissociation constants of these acids were measured potentiometrically in 50% ethanol. It was found that the investigated alkyl substituents lower the dissociation constant of ferrocenecarboxylic acid by approximately the same amount while all other substituents increase it. With the exception of halides the majority of substituents have an inductive effect on the dissociation constants of heteroannular ferrocene-

Card 1/2

L 36634-65
ACCESSION NR: AP5001517

carboxylic acids. It was concluded that induction conductivity of ferrocenyl and benzene rings are about the same. Orig. art. has: 2 tables and 1 figure

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds, Academy of Sciences, SSSR); Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova) Moscow State University

SUBMITTED: 06Jul64 ENCL: 00 SUB CODE: OC, EC

NR REF SOV: 005 OTHER: 007

Card 2/2

L 46186-65 EWT(1)/EWT(m)/EPF(c)/EWP(j)/EEC(t) Pc-4/Pr-4/Pi-4 IJP(c)
WW/GG/RM

ACCESSION NR: AP5007562 S/0020/65/160/005/1075/1078

AUTHOR: Dvoryantseva, G. G.; Portnova, S. L.; Grandberg, K. I.; Gubin, S. P.; Sheynker, Yu. N.; Nesmeyanov, A. N.

TITLE: Nuclear magnetic resonance spectra of ferrocene derivatives

SOURCE: AN SSSR. Doklady, v. 160, no. 5, 1965, 1075-1078

TOPIC TAGS: nuclear magnetic resonance, ferrocene, proton resonance, Hammett constant, cyclic compound, cyclopentadienyl metal

ABSTRACT: The authors measured the chemical shifts of proton signals in high-resolution nuclear magnetic resonance spectra of mono- and heteroannular disubstituted ferrocenes, using 10-15% solutions in CCl_4 and an INM-C-60 nuclear magnetic resonance spectrometer. In the proton resonance spectra of all monosubstituted ferrocenes, a singlet is produced by the five equivalent protons of the unsubstituted five-membered ring, and two triplets are produced by the (*b*) and (*a*) protons of the substituted ring with a spin-spin interaction constant $I \approx 1.5$ cps.

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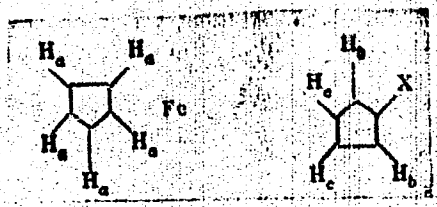
L 46186-65

ACCESSION NR: AP5007562



It was found that the chemical shifts of protons of the unsubstituted ring are chiefly determined by the induction effect of the substituents. The observed values of the shifts δ_b and δ_c indicate a considerable effect of the conjugation of the substituent on the chemical shifts of protons of the substituted ring. Correlations are presented between the values of $\delta_c - \delta_a$ and the conjugation constants of the substituents, between the chemical shifts and the induction constants of the substituents, and between the chemical shifts of protons of the substituted rings and the Hammett constants σ_p of the substituents. The results of the study make it possible to draw a close analogy between the magnitude and character of the influence of the substituents on the (*a*), (*b*), and (*c*) hydrogen atoms of the ferrocenyl nucleus, and correspondingly on the meta, ortho, and para hydrogen atoms of the phenyl nucleus. Orig. art. has: 3 figures, 2 tables, and 5 formulas.

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L 46186-65

ACCESSION NR: AP5007562

ASSOCIATION: Institut khimii prirodnykh soyedinenly Akademii nauk SSSR (Institute of Chemistry of Natural Compounds, Academy of Sciences SSSR); Institut elementoorganicheskikh soyedinenly Akademii nauk SSSR (Institute of Organometallic Compounds, Academy of Sciences SSSR)

SUBMITTED: 20Jul64 ENCL: 00 SUB CODE: MP, OC

NO REF SOV: 007 OTHER: 004

Card 3/3

[redacted], S.P.; [redacted], L.I.

Polarographic reduction of allyl complexes of palladium. Izv. AN SSSR. Ser.khim. no.1:149-151 '66.

(MIR. 19:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR. Submitted May 10, 1965.

L 31364-66 EWP(j)/EWT(m) IJP(c) RM

ACC NR: AP6021104 SOURCE CODE: UR/0062/66/000/002/0384/0384

AUTHOR: Gubin, S. P.; Shepilov, I. P.; Nesmeyanov, A. N. 61 B

ORG: Institute of Organoelemental Compounds, AN SSSR (Institut elementoorganicheskikh soyedineniy)

TITLE: Acetylation of ferrocene by the complex 2CH sub 3 C$$H.BF sub 3

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1966, 384

TOPIC TAGS: ferrocene, acetylene compound, reaction rate, activation energy, spectrophotometric analysis, catalysis, chemical reaction kinetics

ABSTRACT: The authors determined rates of acetylation of ferrocene by the complex $2CH_3COOH \cdot BF_3$ in glacial acetic acid under pseudo-first order conditions. The reaction was arrested by pouring the sample (1 ml) into 20 ml of absolute ethanol. The ferrocene and acetylferrocene concentrations in the solution were determined spectrophotometrically at 337 millimicrons on the SF-4A unit. The apparent energy of activation is 22.4 kcal/mole. When the catalyst concentration is increased, the reaction rate rises. The data obtained shows that ferrocene is 200-300 times more active than anisole in the acetylation reaction. [JPRS]

SUB CODE: 07 / SUBM DATE: 17Nov65 / OTH REF: 001

Card 1/1 UDC: 542.957 + 546.72 + 66.095.11

L 30607-66 EWT(m)/EWP(j) RM

ACC NR: AP6017876 (A) SOURCE CODE: UR/0062/66/000/005/0832/0839

AUTHOR: Porevalova, E. G.; Grandberg, K. I.; Zharikova, N. A.; Gubin, S. P.; Nesmeyanov, A. N.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet); Institute of Organometallic Compounds, Academy of Sciences, SSSR (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

TITLE: Electronic influence of ferrocenyl as a substituent

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 5, 1966, 832-839

TOPIC TAGS: ferrocene, dissociation constant, aniline, benzoic acid, phenol, substituent, amine

ABSTRACT: By determining values of Hammett's σ, the authors studied certain electronic effects of ferrocenyl as a substituent. Using acid-base potentiometric titration, they determined the dissociation constants of p-, m-, and o-ferrocenylbenzoic acids, a series of substituted benzoic acids and ferrocenecarboxylic acid in 70% dioxane, and the dissociation constants of p-ferrocenylphenol and a series of p-substituted phenols in 50% ethanol. The basicity constants of p-, m-, and o-ferrocenylanilines, a series of p-substituted anilines, and ferrocenylamine in 80% ethanol were also determined. The data obtained were treated by the least-squares method, ρ values were calculated for the reaction series studied, σ values were found for ferro-

Card 1/2 UDC: 541 + 541.49 + 547.1'3:541.132

L 36507-66

ACC NR: AP6017876

cenyl as a substituent in various positions of the phenyl ring, and the induction constant σ_I was determined. The data showed that in the series of ferrocenylbenzoic acids, the strongest is o-ferrocenylbenzoic acid; p- and m-ferrocenylbenzoic acids are comparable in strength and are respectively 1.5 and 1.6 times stronger than ferrocenecarboxylic acid, which therefore is the weakest acid. p-Ferrocenylphenol is a weaker acid than phenol (by a factor of 1.3). The opposite relationship is observed in ferrocenyl derivatives of aniline: o-ferrocenylaniline is the weakest base, 300 times weaker than ferrocenylamine. The strongest base, ferrocenylamine, is 42 times stronger than aniline and almost 28 times stronger than p-ferrocenylaniline. It is concluded that ferrocenyl has a strong positive inductive effect and a weak positive conjugation effect. Orig. art. has: 7 tables and 2 formulas.

SUB CODE: 07,20/SUBM DATE: 27Dec63/ ORIG REF: 009/ OTH REF: 014

Card 2/2 nch

ACC NR: AP7012420 SOURCE CODE: UR/0062/66/000/011/1938/1943

AUTHOR: Nesmeyanov, A. N.; Perevalova, E. G. Tyurin, V. D.; Gubin, S. P.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Metallation of alkylferrocenes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1966, 1938-1943

TOPIC TAGS: ferrocene, lithium compound, ferrocenyllithium

SUB CODE: 07

ABSTRACT: The metallation of methyl-, ethyl-, and n-propylferrocene with excess n-butyllithium at room temperature was studied. Mixtures of mono- and dimetallated alkylferrocenes were obtained. The monometallated alkylferrocenes were found to possess a heteroannular structure. The mixture of mono- and dimetallated alkylferrocenes, after carboxylation, were converted to a mixture of mono- and dicarboxylic acids. Metallation of alkylferrocenes proceeded with greater difficulty than that of ferrocene itself. Approximately 2-2.5 times as much of the monometallated alkylferrocene was formed as of the dimetallated derivative. The metallated alkylferrocenes were also used for the synthesis of heteroannular nitroalkylferrocenes by the reaction with propyl nitrate. Nitromethyl-, nitroethyl-, and nitropropylferrocenes were obtained in low

Card 1/2 UDC: 542.91 + 547.1'13 + 546.72

0932 1356

ACC NR: AP7012420

yields. No dinitro-compounds were isolated. Orig. art. has: 3 formulas, 4 tables. [JPRS: 40,422]

2/2

ACC NR: AP7013134 SOURCE CODE: UR/0062/66/000/009/1551/1558

AUTHOR: Gubin, S. P.

ORG: Institute of Heteroorganic Compounds, AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR)

TITLE: Electronic effects of substituents in ferrocene and its derivatives

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 9, 1966, 1551-1558

TOPIC TAGS: ferrocene, chemical substituent

SUB CODE: 07

ABSTRACT: In a report presented at the General Meeting of the Department of General and Technical Chemistry, Academy of Sciences USSR, on 16 December 1965, the author describes a detailed study of the nature of the interring electron effects in the ferrocene molecule. Classical methods, such as measurement of the dissociation constants of the acids and study of the absorption spectra in the ultraviolet and visible region, and comparatively new methods, such as study of the proton magnetic resonance and nuclear gamma resonance spectra were used to study the transmission of electronic effects in the ferrocene molecule, and a reaction specific for ferrocene derivatives was also investigated: reversible oxidation at the iron atom. The numerical data obtained were treated by methods of correlational analysis. The transmission of the influence of sub-

 UDC: 541+542.957+546.72

0933 0829

ACC NR: AP7013134

stituents along the ring-metal bond was found to be predominantly inductive in character. Orig. art. has: 9 figures. [JPRS: 40,422]

Card 2/2

GUBIN, S.S.

New developments in the financing of information organs.
NTI no.9:5-6 '65.
(MIRA 19:1)

KAYZERMAN, M.M., mayor meditsinskoy sluzhby; ZAVRAZHIN, M.K., podpolkovnik meditsinskoy sluzhby; KNYAZEV, S.V., podpolkovnik meditsinskoy sluzhby; KOBYAKOV, N.I., podpolkovnik meditsinskoy sluzhby; DOKUCHAYEV, G.M., podpolkovnik meditsinskoy sluzhby; PLETNEV, N.N., polkovnik meditsinskoy sluzhby; KHOROSHCHEV, V.D., podpolkovnik meditsinskoy sluzhby; GORBACHIK, Ye.D., podpolkovnik meditsinskoy sluzhby; DRUKER, Yu.S.; NAZAROV, K.M.; KOMOGOROV, P.R., polkovnik meditsinskoy sluzhby; KLIMENKO, A.V., podpolkovnik meditsinskoy sluzhby; RYAKHOVSKIY, I.Ye., podpolkovnik meditsinskoy sluzhby; IVAN'KOVICH, F.A.; GUBIN, S.V., kapitan meditsinskoy sluzhby; ZOTOV, I.G., kapitan meditsinskoy sluzhby; LEONOVA, Ye.I.; BUNTOVSKIY, P.A., mayor meditsinskoy sluzhby; GERASIMOV, A.N., podpolkovnik meditsinskoy sluzhby; GUR'YEV, I.A., kapitan meditsinskoy sluzhby; KOLDOBSKIY, S.Z., mayor meditsinskoy sluzhby

Abstracts. Voen. med. zhur. no.10:74-79 O '65.
(MIRA 18:11)

GUBIN, V., sud'ya respublikanskoy kategorii

Competing for seconds. Voen.znan. 36 no.11:30-31 N'60.
(MIRA 13:11)

(Aquatic sports)

GUBIN, V.

In the design bureaus. Tekh.est. no.5:32 My '65.

(MIRA 18:6)

9(6)

S/146/59/002/06/004/016
D002/D006

AUTHORS: Sitnikov, O.P., Perminov, Yu.A., Gubin, V.A.

TITLE: A Device for Measuring the Errors of Automatic Control Systems

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, 1959, Nr 6, pp 23-28 (USSR)

ABSTRACT: Detailed information is given on a device (Figure 1 and 2) for measuring the errors of automatic control systems. It is a decoupling lowfrequency amplifier with a relatively wide dynamic range and has a double triode whose grid receives the voltage from the integration chains serving as the error signal input. The signal causes a disbalance of the triode currents, which is recorded by an indicating instrument. The device measuring the mean square error value consits of a preamplifier, a detector, a squaring de-

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9(6)

S/146/59/002/ 06/004/016
D002/D006

A Device for Measuring the Errors of Automatic Control Systems

vice, an operation amplifier, and an integrating amplifier. Good results can be obtained with stabilized feed sources of +300 volts, - 300 volts, - 190 volts, and +80 volts. V.S. Pugachev's random functions theory [Ref. 1] was used in selecting the optimal averagi-g interval. The article was recommended by the Kafedra apparatury avtomaticheskogo upravelniya (Chair of Automatic-Control Devices). There are 2 diagrams, 2 graphs, and 1 Soviet reference.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnic Institute imeni S.M. Kirov).

SUBMITTED: December 29, 1958

Card 2/2

LAPTEVA-POPOVA, M.S.; GUBIN, V.A.

Changes in the formation of blood caused by ionizing radiations.
Itogi nauki.Biol. nauki no.1:214-261 '57. (MIRA 11:3)
(RADIATION--PHYSIOLOGICAL EFFECT) (BLOOD)

GUBIN, V.A.

Nomogram for the color index and absolute number of thrombocytes, neutrophils and lymphocytes. Probl.gemat. i perel.krovi 3 no.3:61-62 My-Je '58 (MIRA 11:6)

(BLOOD CELLS,
nomogram for color index & absolute number of blood platelets, neutrophils & lymphocytes (Rus))

GUBIN, V.A.

Certain histochemical studies of blood cells in acute radiation sickness. Med.rad. 4 no.10:3-8 O '59. (MIRA 13:2)
(RADIATION INJURY exper.)
(BLOOD CELLS radiation eff.)

GUBIN, V.A. (Moskva)

Studying leucocytes of the peripheral blood in rabbits by supravital staining in acute radiation injuries. Probl. gemat. i perel. krovi 4 no. 10:19-22 O '59. (MIRA 13:8)
(X RAYS—PHYSIOLOGICAL EFFECT) (LEUKOCYTES)

GUBIN, V.A. (Moskva, D-182, Mal.Shchukinskaya ul., 15, kv.32)

In vitro cultivation of bone marrow and spleen of rabbits irradiated with roentgen rays. Arkh.anat.gist.i embr. 39 no.11:3-10 N '60. (MIRA 14:5)

1. Ministerstvo zdravookhraneniya SSSR (nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. N.A.Krayevskiy)
(MARROW) (SPLEEN) (RADIATION--PHYSIOLOGICAL EFFECT)

L 03781-67 EWT(m) GD

ACC NR: AT6029629 SOURCE CODE: UR/0000/66/000/000/0150/0157

AUTHOR: Volokhova, N. A.; Gubin, V. A.; Darenskaya, N. G.; Koznova, L. B.; Korchenkin, V. I.; Nevskaya, G. P.; Sedov, V. V.

47
B+1

ORG: none

TITLE: Peculiarities of clinical manifestations of radiation sickness in rhesus monkeys during gamma-ray irradiation

SOURCE: Voprosy obshchey radiobiologii (Problems of general radiobiology). Moscow, Atomizdat, 1966, 150-157

TOPIC TAGS: ~~[illegible]~~ radiation biologic effect, monkey, dog, ionizing radiation, ~~[illegible]~~ hematology

ABSTRACT: A comprehensive clinical examination of gamma-irradiated monkeys was conducted, and the data were compared with results of similar examinations of dogs. Seventeen monkeys (Macaca rhesus) of both sexes, weighing 2.0 to 4.0 kg, were subjected to gamma irradiation from an EGO-2 apparatus with a dose rate of 357—313 r/min. Prior to irradiation, all monkeys had been under clinical observation for 2—3 weeks. Eleven of the 14 monkeys irradiated with 300 r died (average duration of life 16.5 days), while two of the 3 monkeys irradiated with 350 r died (29.5 and 36.2 days after irradiation). Both groups of gamma-

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irradiated monkeys were considered together, since the clinical manifestations of radiation sickness were similar in both groups. Experimental data were compared with data from analogous dog experiments, using a 300-r dose of gamma rays, and no essential differences in the radiation effect were noted between the two species. However, the spread of life durations in monkeys (6.5—36.2 days) was wider than for dogs (11.5—18.5 days). The primary reaction to radiation was more pronounced and developed more rapidly in monkeys than in dogs. The primary radiation reaction was absent in 2 out of 17 monkeys, as compared with 18 out of 28 dogs. Furthermore, seven monkeys experienced severe primary radiation reactions, while none of the dogs did. In the first 10—11 days after irradiation, no essential differences were noted between the temperature reactions of monkeys and dogs. However, by the time of death dogs had elevated body temperatures (average 1.5C above normal), whereas monkeys' temperatures had fallen considerably below normal. Symptoms of radiation sickness appeared later (15—18 days after irradiation) and developed more gradually in monkeys than in dogs (7—12 days). Autonomic dysfunction is considered responsible for the lability of symptoms in monkeys in the early postradiation period. This hypothesis is substantiated by the considerable variations in blood pressure, the unstable heart rhythm, etc. Hematopoietic changes in monkeys in response to radiation had a phase character, demonstrating the different course of the radiation reaction in different

L 03781-67

ACC NR: AT6029629 O

types of cells. Since blood regeneration occurred even in monkeys dying after 30—36 days, it was concluded that blood changes were not the primary factor in animal deaths. The lower lethal dose values encountered in these experiments are partially explained by differing experimental conditions, but require further study. Orig. art. has: 2 figures and 1 table. [JS]

SUB CODE: 06/ SUBM DATE: 23Apr66/ ORIG REF: 008/ OTH REF: 006
ATD PRESS: 5064

Card 3/3

RODNENKOV, Mikhail Gavrilovich; GUBIN, V.A., inzh., retsenzent; BUDARTSEVA, S.S., inzh., retsenzent; OSIPOV, V.D., red.; GORYUNOVA, L.K., red.izd-va; KORNYUSHINA, A.S., tekhn.red.

[Mechanizing the felling and the division of timber] Mekhanizatsiia valki i razvedki lesa. Moskva, Goslesbumizdat, 1960. 138 p. (MIRA 13:7)

(Lumbering)

GUBIN, V. A.

25881

Vliyanie vremennago otsutstviya matki na medosbor (C. primech. red) Pchelovodstvo, 1949, No. 8, s. 13-17.

SO: Letopis' No. 34

1. V. A. GUBIN

2. USSR (600)

4. Bee Culture

7. Can the departure of natural swarm be hastened? Pchelovodstvo 29 no. 12. 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

GUBIN, V. A.

Microscope and Microscopy

Box for measuring the proboscis and other parts of bees' bodies. Pchelovodstvo 30, No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

USSR/Farm Animals - Honey Bee Q-7

Abs Jour : Ref Zhur - Biol., No 6,1958, No 26255

Author : Gubin V.A.
Inst : Not Given
Title : On the Sharpness of the Sense of Smell in Melliferous Bees (O tonkosti obonyaniya u medonosnykh pchel)

Orig Pub : Pchelovodstvo, 1957, No 7, 17-19

Abstract : It was established experimentally that bees acquainted with mixed smell are capable of distinguishing smells of the separate components of the mixture.

Card : 1/1

54

Aleksandr Fedorovich Gubin. Moskva, 1958. 37 p. (MIRA 13:8)
(Gubin, Aleksandr Fedorovich)

GUBIN, Vadim Aleksandrovich; ZUBKOV, M.A., otv. red.; SHEVCHENKO, G.N., tekhn. red.

[School apiary] Shkol'naia paseka. Moskva, Gos. izd-vo detskoi lit-ry M-va prosv. RSFSR, 1960. 109 p. (MIRA 14:7)
(Bee culture—Study and teaching)

GUJIN, V.I., veterinarnyy vrach.

Therapeutic utilization of the milkin machine. Veterinariia 30 no.9:51 S '53. (MLRA 6:8)

1. Eksperimental'naya baza ordena Lenina sel'skokhozyaystvennoy akademii imeni K.A. Timiryazeva.

GUBIN, V.I., otv. red.; KOGAN, N., red.

[Numerical methods of weather forecasting and problems of synoptic meteorology] Chislennye metody prognoza pogody i voprosy sinopticheskoi meteorologii. Tashkent, Izd-vo "Nauka" UzSSR, 1964. 100 p. (MIRA 18:1)

1. Akademiya nauk Uzbekskoy SSR, Tashkent. Institut matematiki. 2. Chlen-korrespondent AN Uzbekskoy SSR (for Gubin).

GUBIN,V.I., kandidat tekhnicheskikh nauk

New woolen fabrics. Tekst.prom.15 no.8:12-17 Ag'55. (MLRA 8:11)

1. Direktor TSentral'nogo Nauchno-issledovatel'skogo instituta shersti

(Woolen and worsted manufacture)

GUBIN, V.I., kandidat tekhnicheskikh nauk; GUSEV, V.Ye., kandidat tekhicheskikh nauk.

Reorganization of spinning in the cloth industry. Tekst.prom. 16 no.1:34-37 Ja '56. (MLRA 9:4)

1.Direktor TSentral'nogo nauchno-issledovatel'skogo instituta shersti (for Gubin).
(Woolen and worsted spinning)

MARGULIS, Ye.M., inzh.; GUBIN, V.I., inzh.; YESENGULOV, T.Ye.

Achievements of mine builders in shaft sinking in Dzhezkazgan. Shakht.stroi. 4 no.9:18-20 S '60. (MIRA 13:8)

1. Dzhezkazganskoye shakhtoprokhodcheskoye upravleniye tresta Stalinshakhtoprokhodka (for Margulis). 2. Institut gornogo dela Akademii nauk KazSSR (for Gubin, Yesengulov).
(Dzhezkazgan—Shaft sinking)

BAKAYEV, M.T.; GUBIN, V.I.

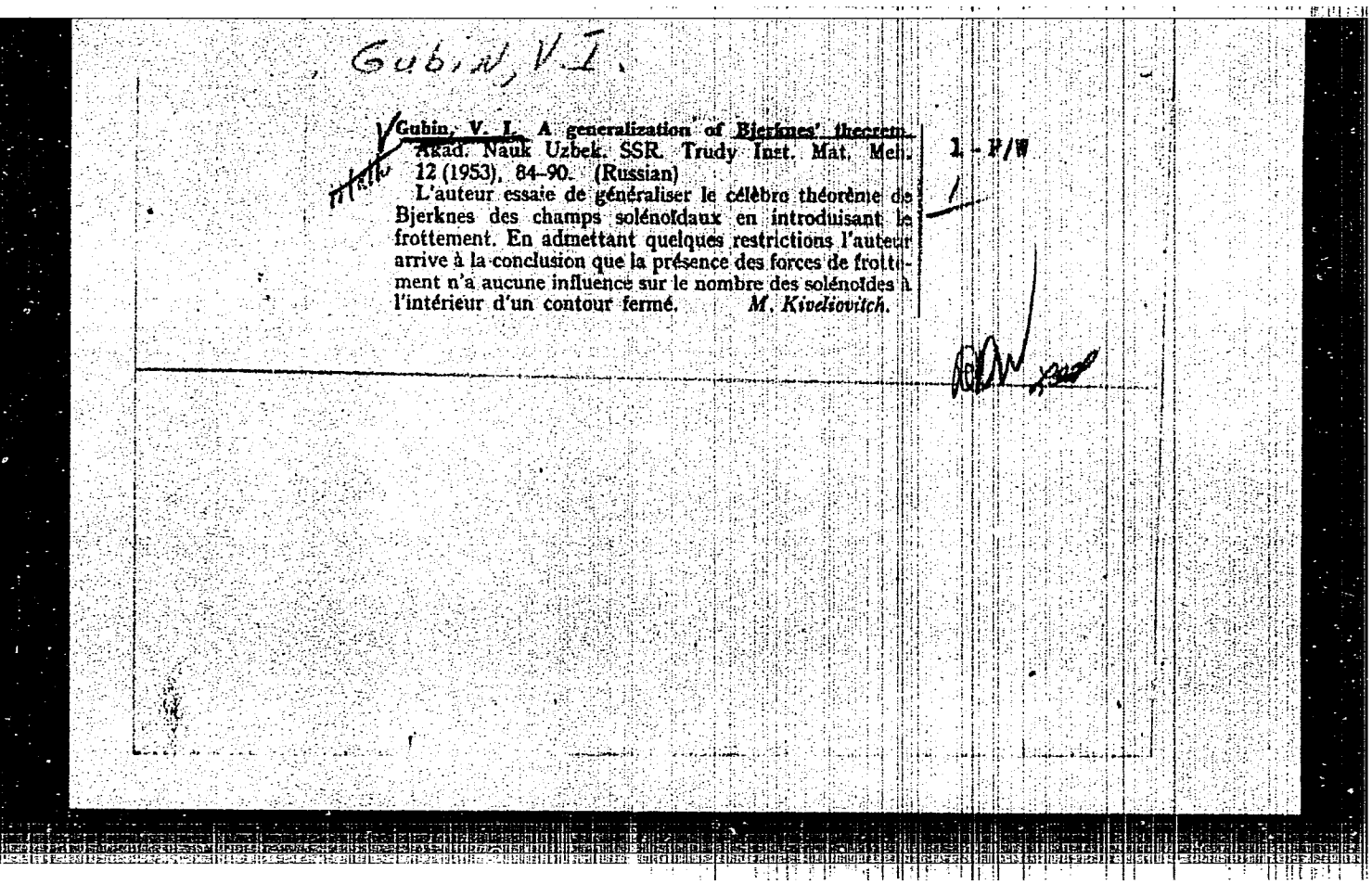
Evaluation of methods of mining ore in the Dzhezkazgan Mine. Trudy Inst. gor. dela AN Kazakh. SSSR 10:67-74 '63. (MIRA 16:8)

(Dzhezkazgan District—Mining engineering)

GUBIN, V. I.

Gubin, V. I. and Nosenko, B. M. "On the theory of the Habbel effect," Trudy Fiz.-tekhn. in-ta (Akad. nauk Uzbek SSR), Vol. II, Issue 2, 1949, p. 45-49

SO: U-5241, 17 December 1953, (Letopis 'Zhurnal 'nykh Statey No. 26, 1949)



Gubin, V. I.

Gubin, V. I. A generalization of Bjerknes' theorem. Akad. Nauk Uzbek. SSR. Trudy Inst. Mat. Mek. 12 (1953), 84–90. (Russian)

L'auteur essaie de généraliser le célèbre théorème de Bjerknes des champs solénoïdaux en introduisant le frottement. En admettant quelques restrictions l'auteur arrive à la conclusion que la présence des forces de frottement n'a aucune influence sur le nombre des solénoïdes à l'intérieur d'un contour fermé. *M. Kivelsovitch.*

GUBIN, V.I.

One method of precalculation of advective changes of temperature and pressure. Trudy Inst.mat. i mekh. AN Uz.SSR no.12:91-96 '53.
(Weather forecasting) (MLRA 8:1)

SOV/124-57-8-9147

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 8, p 82 (USSR)

AUTHOR: Gubin, V. I.

TITLE: On the Vertical Wind Shear (O sdvige vetra s vysotoy)

PERIODICAL: V kn.: Meteorol. i gidrol. v Uzbekistane, Tashkent, AN UzSSR, 1955, pp 111-120

ABSTRACT: The author examines the system of differential equations of a frictionless atmosphere

$$\frac{du}{dt} = -a\frac{\partial p}{\partial x} + \ell v - f w, \qquad \frac{dv}{dt} = -a\frac{\partial p}{\partial y} - \ell u, \qquad \frac{dw}{dt} = -a\frac{\partial p}{\partial z} - g + f u \qquad (1)$$

Here u, v, and w are the components of the wind-velocity vector along the x, y, and z axes, respectively; p is the pressure and a the specific volume of the atmospheric air; g is the acceleration due to the force of gravity; $\ell = 2\omega \sin\phi$, $f = 2\omega \cos\phi$, where ϕ is the geographic latitude of a point; and ω is the angular velocity of the rotation of the Earth. Upon transformation and evaluation of the orders of magnitude of the terms system (1) reduces to the following form:

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SOV/124-57-8-9147

On the Vertical Wind Shear

$$\frac{d}{dt}\frac{\partial u}{\partial z} - \ell\frac{\partial v}{\partial z} = (a, p)_{xz}, \qquad \frac{d}{dt}\frac{\partial v}{\partial z} + \ell\frac{\partial u}{\partial z} = (a, p)_{yz} \qquad (2)$$

where

$$(a, p)_{xz} = \frac{\partial a}{\partial x}\frac{\partial p}{\partial z} - \frac{\partial a}{\partial z}\frac{\partial p}{\partial x} \qquad \text{and} \qquad (a, p)_{yz} = \frac{\partial a}{\partial y}\frac{\partial p}{\partial z} - \frac{\partial a}{\partial z}\frac{\partial p}{\partial y}$$

System (2) affords an approximate determination of the vertical wind shear, wherein in a first approximation the problem is considered to be stationary. Some qualitative deductions are made. The paper contains typographical errors.

Sh. A. Musayelyan

Card 2/2

SOV/124-57-7-8036

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 7, p 85 (USSR)

AUTHOR: Gubin, V. I.

TITLE: Frontogenesis and Pressure Changes (Frontogenez i izmeneniye davleniya)

PERIODICAL: Dokl. AN UzSSR, 1955, Nr 12, pp 3-6

ABSTRACT: The author examines the relationship between frontogenetic conditions and the variation with time in the elevation of a constant-pressure surface. The vorticity equation, written in terms of a system of independent variables x, y, p, and t (p being the pressure) is employed in the form:

$$\frac{d}{dt}(\Omega \cdot \nabla T) - (\Omega \cdot \nabla)\frac{dT}{dt} = 0 \qquad (1)$$

wherein Ω is the vorticity vector, T the temperature, and t the time. The vorticity components along the axes x and y and with respect to the pressure p are assumed, respectively, to have the forms

$$\Omega_p = \frac{\Delta\Phi}{\ell} + \ell, \quad \Omega_x = \frac{R}{\ell p}\frac{\partial T}{\partial x}, \quad \Omega_y = \frac{R}{\ell p}\frac{\partial T}{\partial y} \qquad (2)$$

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Frontogenesis and Pressure Changes

wherein Φ is the geopotential, ℓ the Coriolis parameter, and R the gas constant. Whence the author arrives at the following equation:

$$\frac{\partial}{\partial t}(\Delta\Phi) = -v \cdot \nabla \Delta\Phi - \frac{RT_\nu}{pT_p}(F' + 2F'') + \frac{RT_\nu^2}{p^2 T_p}\tau + \ell^2 \tau_p - \ell\beta \qquad (3)$$

Here $\tau = dp/dt$ and $\gamma = d\ell/dt$, and the expressions

$$F' = \frac{1}{T_\nu}\nabla_1 T \cdot \nabla_1 \frac{dT}{dt} \quad \text{and} \quad F'' = -\frac{1}{T_\nu}\nabla_1 T \cdot \nabla_1 v \cdot \nabla T \qquad (4)$$

(wherein $T_\nu = |\nabla_1 T|$ and ∇_1 is the horizontal Hamilton operator) characterize an individual frontogenesis defined as the degree of variation with time in the modulus of the horizontal temperature gradient. By using equation (3) the author is able to elucidate qualitatively the relationship between the conditions that lead to a variation in the elevation of a constant-pressure surface and the conditions of frontogenesis.

V.V. Bykov

GUBIN,V.I.

Determining wind velocity on the basis of a pressure field.
Trudy Inst.mat.i mekh.AN Uz.SSR no.14:3-10 '55. (MIRA 8:8)
(Winds) (Atmospheric pressure)

124-57-1-698

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 90 (USSR)

AUTHOR: Gubin, V.I.

TITLE: To a Theory of Local Frontogenesis (K teorii lokal'nogo frontogeneza)

PERIODICAL: Tr. In-ta matem. i mekhan. AN UzSSR, 1955, Nr 14, pp 11-26

ABSTRACT: A mathematical "local frontogenesis index" is proposed, as follows

$$\phi = \rho \frac{a^2 \nabla T \nabla T_t - ab \nabla T \nabla \theta_t}{\sqrt{(a \nabla T - b \nabla \theta)^2}} \qquad (1)$$

$$\nabla T_t = \nabla \frac{\partial T}{\partial t}, \qquad \nabla \theta_t = \nabla \frac{\partial \theta}{\partial t}$$

where ρ is the density of the air, ∇T is the temperature gradient, $\nabla \theta$ is the pressure gradient at the 700-millibar surface, and a and b are nearly constant quantities.

Card 1/2

To a Theory of Local Frontogenesis

The above introduced index reveals that a full analysis of local frontogenetic conditions can be performed geometrically by means of an investigation of the particularities of the isallothermic and isallobaric fields, also the structure of the temperature and pressure fields of the lower half of the troposphere. The index Φ also affords a means - after some relatively simple transformations of Equation (1) - to identify mathematically conditions of frontogenesis ($\Phi > 0$) and frontolysis ($\Phi < 0$) in any area from the initial temperature-pressure field of the troposphere.

N. I. Zverev

1. Meteorology--Mathematical analysis 2. Weather forecasting--Troposphere effects--Theory

SOV/124-58-1-841

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 110 (USSR)

AUTHOR: Gubin, V. I.

TITLE: On Variations of Some Meteorological Elements Within Frontal Zones (Ob izmenenii nekotorykh meteorologicheskikh elementov vnutri frontal'nykh zon)

PERIODICAL: Izv. AN UzSSR, ser. fiz.-matem. n., 1957, Nr 1, pp 53-73

ABSTRACT: In order to determine the vertical currents, as well as the variations of the temperature and geopotential height of constant-pressure surfaces, the author starts from the vorticity equation written in the p system:

$$\frac{d}{dt}(\Omega \cdot \nabla T) - (\Omega \cdot \nabla)\frac{dT}{dt} \qquad (1)$$

where Ω is the absolute vorticity, T the temperature, ∇ the Hamilton operator in the p system, and t the time. The nongeostrophic corrections in the horizontal wind-velocity vector component are accounted for only in the heat-advection equation

Card 1/3

On Variations of Some Meteorological Elements Within Frontal Zones

$$\frac{dT}{dt} - \frac{RT\gamma_a}{g}\frac{\tau}{p} = \frac{q}{c_p} \qquad (2)$$

where q is the heat advected in one second to a unit mass, γ_a is the adiabatic lapse rate, p is the pressure, g is the acceleration due to the force of gravity, c_p is the specific heat at constant pressure, and R is the gas constant. Equation (1) in the geostrophic approximation is written in the form

$$\Delta\frac{\partial\Phi}{\partial t} - \frac{R}{P}\left(\frac{\partial T}{\partial x}\frac{\partial\tau}{\partial x} + \frac{\partial T}{\partial y}\frac{\partial\tau}{\partial y}\right) - l^2\frac{\partial\tau}{\partial p} - \frac{R}{p}\Delta T\tau = -\left(\Phi, \frac{\Delta\Phi}{l} + l\right) \qquad (3)$$

where

$$\Delta = \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}, \qquad (A, B) = \frac{\partial A}{\partial x}\frac{\partial B}{\partial y} - \frac{\partial A}{\partial y}\frac{\partial B}{\partial x}$$

Φ is the geopotential, and l is the Coriolis parameter. From equations (2) and (3) the author, upon enlisting the equation of static equilibrium

$$\frac{\partial\Phi}{\partial p} = -\frac{RT}{p}$$

Card 2/3

On Variations of Some Meteorological Elements Within Frontal Zones

determines $\partial\Phi/\partial t$, $\partial T/\partial t$, and τ first in the geostrophic approximation and then, in order to account for the nongeostrophic correction, he employs the horizontal components of the wind-velocity vector, u and v, in the heat-advection equation, to obtain the expressions:

$$u = -\frac{1}{l}\frac{\partial\Phi}{\partial y} - \frac{1}{l^2}\left[\frac{\partial^2\Phi}{\partial x\,\partial t} + \frac{1}{l}\left(\Phi, \frac{\partial\Phi}{\partial x}\right) + \tau\frac{\partial^2\Phi}{\partial x\,\partial p}\right]$$

$$v = -\frac{1}{l}\frac{\partial\Phi}{\partial x} - \frac{1}{l^2}\left[\frac{\partial^2\Phi}{\partial y\,\partial t} + \frac{1}{l}\left(\Phi, \frac{\partial\Phi}{\partial y}\right) + \tau\frac{\partial^2\Phi}{\partial y\,\partial p}\right]$$

Sh. A. Musayelyan

Card 3/3

GUBIN, V.I., Doc Phys Math Sci -- (diss) "On the problem of the hydrodynamic theory of frontogenesis." Tashkent, Pub House of Acad Sci UzSSR, 1958, 12 pp (Acad Sci UzSSR. Inst of Mathematics and Mechanics im V.I. Pomanovskiy) 200 copies (KL, 27-58, 101)

GUBIN, V.I.

Numerical forecasting of the geopotential height of isobaric surfaces. Trudy Sred.-Az.nauch.-issl.gidrometeor.inst. no.2:92-98 '59. (MIRA 13:6)

(Atmospheric pressure)

3(7),10(6)

AUTHOR: Gubin,V.I. SOV/166-59-3-6/11

TITLE: On the Calculation of Vertical Flows

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 3, pp 39-46 (USSR)

ABSTRACT: Since the immediate measurement of the vertical air flows being essential for the weather forecast is unperformable, they must be obtained from the hydro-thermodynamic equations. The author establishes the corresponding system of differential equations and completes it by roughly approximating boundary conditions. For the solution of the system the author uses the difference method and the electronic computer "Strela". As an example the vertical flows in the time from November 14 to 18, 1954 are calculated.
There are 2 figures, and 4 references, 1 of which is Soviet, 2 American, and 1 English.

ASSOCIATION: Institut matematiki imeni V.I.Romanovskogo AN Uz SSR (Mathematical Institute imeni V.I.Romanovskiy AS Uz SSR)

SUBMITTED: January 31, 1959

Card 1/1

S/049/59/000/03/017/019

AUTHORS: Gubin, V. I., Dzhordzhio, V. A., Petrosyants, M. A. and Romanov, N. N.

TITLE: Book Review

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 3, pp 489-492 (USSR)

ABSTRACT: The following book is reviewed: I. A. Kibel' "Introduction to the Hydrodynamic Methods of Short-Period Weather Forecasting". The book originated as a course of lectures given by Professor I. A. Kibel' in 1955 to 1956 at the Moscow State University. According to the reviewers, this is the first real monograph embodying the whole field of meteorology at the highest level, never before published in the USSR.

Card 1/1

ON THE CALCULATION OF THE MEASURE OF FRONTOGENESIS AT AVERAGE LEVEL

(The theses at the Symposium in Helsinki)

1. An absolute derivation of modulus of logarithm gradient temperature is adopted as a factor (measure) of frontogenesis. The factor (measure) distribution character at this or that isobaric surface and at the average level as well (Δz/-500) make possible to judge about the deformation direction of the height frontal zone.

2. The scheme of the calculation of frontogenesis measure at level Δz-500 is given. It is applied for the account on the electronic machines. The calculation scheme is based on two-leveled model of atmosphere.

3. The calculation was made on the electronic computer "Strela". The mesh region consisted of 391 units (23x17) with $\frac{\Delta}{\Delta}$ = 250 km step.

4. Account examples of frontogenesis conditions are given for some concrete situation with the analysis of the generated results.

L. A. Gubin
U.S.S.R.

Report submitted for the XII General Assembly of the Intl. Union of Geodesy and Geophysics, Helsinki, Finland, 25 July - 6 August 1960.

PHASE I BOOK EXPLOITATION SOV/4349

Gubin, V. I.

K gidrodinamicheskoy teorii frontogeneza (Hydrodynamic Theory of Frontogenesis) Tashkent, Izd-vo AN Uzbekskoy SSR, 1960. 141 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR. Institut matematiki.

Ed.: V. A. Dzhordzhio, Doctor of Geographical Sciences; Ed. of Publishing House: Ye. P. Yakovenko; Tech. Ed.: Z. P. Gor'kovaya.

PURPOSE: This book is intended for specialists in the field of dynamic and synoptic meteorology.

COVERAGE: The book deals with the theoretical foundations of frontogenesis and frontolysis – the process of the formation and decay of frontal zones, particularly planetary altitudinal frontal zones – on the basis of hydrothermodynamic equations and the modern theory of the variation of

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pressure and other meteorological elements. The terms proportional to frontogenesis are preserved, and their complete analytic solution is given. Qualitative and quantitative conditions favorable for frontogenesis are discussed. Since frontogenesis cannot be considered isolated from other processes in the atmosphere, particularly cyclogenesis, an attempt is made to establish the relationship between these two phenomena. The quantities which characterize frontogenesis and cyclogenesis were calculated on an electronic computer of the "Strela" type. Some practical conclusions of a preliminary nature are made on the basis of an analysis of the distribution of these quantities. The author states that the problems of the jet stream, which should be included in a complete theory of frontogenesis, are not covered in this book since they require a separate thorough investigation. The author thanks I. A. Kibel', Corresponding Member, Academy of Sciences USSR, for his advice. There are 58 references: 39 Soviet, 16 English, and 3 German.

Gubin, V.

S/166/60/000/03/06/011
C111/C222

AUTHORS: Gubin, V.I. and Karimberdyyeva, S.

TITLE: Forecast of the Height AT - 700 With the Aid of the Electronic Computer "Ural"

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No. 3, pp. 38 - 43

TEXT: The authors consider a scheme for the forecast of the geopotential height 700 mb of the isobaric surface with the aid of the electronic computer "Ural" of the Research Center of the Institute of Mathematics AS Uz SSR. The barotropic atmospheric model is used. The comparison of the calculated and the real sinoptical situation for November 15, 1954 yields a partial agreement.
There are 2 figures and 2 Soviet references.

ASSOCIATION: Institut matematiki imeni V.I. Romanovskogo AN Uz SSR (Institute of Mathematics imeni V.I. Romanovskiy AS Uz SSR)

SUBMITTED: January 27, 1960
Card 1/1

S/044/62/000/009/037/069
A060/A000

3,5000

AUTHOR: Gubin, V. I.

TITLE: Evaluating the altitudes of isobaric surfaces for the two-layer model of the atmosphere on the electronic computer "Ural"

PERIODICAL: Referativnyy zhurnal, Matematika, no. 9, 1962, 21, abstract 9V109 (In collection: "Materialy Soveshchaniya Koordinats. komis. po chisl. metodam prognoza". Leningrad, Gidrometeoizdat, 1961, 53 - 54)

TEXT: The paper describes some results of computations carried out according to a numerical method elaborated by the author, for forecasting the geopotential for a two-layer model of the atmosphere. The forecast is given by time-steps. At each step three requisite functions of the variables x, y are determined by solving the Poisson equation for each of them. The Poisson equation is solved "locally" for the neighborhood of each point of the grid.

S. L Belousov

[Abstracter's note: Complete translation]

Card 1/1

3303

S/169/61/000/012/069/089
D228/D305

3,5000

AUTHOR: Gubin, V. I.

TITLE: The equation describing intense frontal zones

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 12, 196[illegible], 59, abstract 12B371 (UzSSR Fanlar Akad. Doklady, Dokl. AN UzSSR, 1961, no. 4, 11-14)

TEXT: The equations of hydrothermodynamics for high frontal zones with large temperature gradients are recorded in the system x, y, p on the assumption of a quasi-static atmosphere and a flat terrain. The equation of the vortex of velocity is recorded in a geostrophic approximation, ageostrophic corrections being taken into account in the equation of heat inflow:

$$\Delta\dot{\Phi} - l^2\omega_\zeta + l^2 n\omega = -A' ; \quad \Phi_\zeta - \mu^2\omega = RB,$$

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The equation describing...

where Φ is the geopotential, $A' = \left(\Phi, \frac{\Delta\Phi}{l} + 1\right)$,

$n = 1 + \frac{R\Delta T}{l^2}$, μ is the quantity having the dimension

and meaning of the propagational speed of the disturbances of meteorologic elements, and R is the gas constant;

$$B = \frac{1}{l}(T, \Phi) + \frac{1}{l^3}\left[T_x(\Phi, \Phi_x) + T_y(\Phi, \Phi_y)\right] + \frac{q}{\gamma_p}$$

$$\dot{\Phi} = \partial\Phi/\partial t .$$

The recorded equations are solved under "natural" boundary con-

Card 2/3

The equation describing...

ditions in relation to ζ . The hyperbolic equation

$$\Delta\dot{\Phi} - \frac{1^2}{\mu^2}\dot{\Phi}_{\zeta\zeta} + \frac{1^2 n}{\mu^2}\dot{\Phi}_{\zeta} = -\left(A' + \frac{1^2 R}{\mu^2}B_{\zeta} - \frac{1^2 R}{\mu^2}B\right)$$

is finally derived for Φ . μ defines the region of physically reasonable solutions which lie within a characteristic cone. This means that for an arbitrary height ζ it is necessary to take into account the influence on the observational point of only those sources which lie in a circle of radius

$$\rho = \sqrt{(x - x')^2 + (y - y')^2} \quad .$$

[Abstracter's note: Complete translation.]

Card 3/3

GUBIN, V.I., gornyy inzh.

Determining the correction factor for establishing the size of pieces of broken ore. Gor. zhur. no.12:54 D '62. (MIRA 15:11)

1. Institut gornogo dela AN Kazakhskoy SSR.
(Dzhezkazan District—Ore handling)

GUBIN, V.I.

Equations describing intensive frontal zones. Trudy Inst. mat. AN Uz. SSR no.25:1-16 '62. (MIRA 16:8)
(Meteorology)

BAKAYEV, M.T.; GUBIN, V.I.; SAPARGALIYEV, M.S.

Using straight cuts before drilling with a self-propelled drilling rig. Trudy Inst. gor. dela AN Kazakh.SSR 12:22-29 '63. (MIRA 17:8)

L 46181-65 EWT(1)/FCC GS/GW

ACCESSION NR: AT5009164 S/0000/64/000/000/0045/0051 12 B+1

AUTHOR: Gubin, V. I. (Corresponding member AN UzSSR); Dzhordzhio, V.A.

TITLE: Setting up a system for objective analysis of atmospheric fronts and jet streams

SOURCE: AN UzSSR. Institut matematiki. Chislennyye metody prognoza pogody i voprosy sinopticheskoy meteorologii (Numerical methods of weather forecasting and problems in synoptic meteorology). Tashkent, Izd-vo Nauka UzSSR, 1964, 45-51

TOPIC TAGS: jet stream, weather forecasting, frontal zone, tropopause

ABSTRACT: The use of electronic computers for processing the growing volume of meteorological information makes it important to set up a system for objective analysis in predicting atmospheric fronts and jet streams. Fronts and jet streams are assumed to be integral parts of larger atmospheric structures, such as high-altitude planetary frontal zones, huge formations with high baroclinicity and considerable concentrations of potential and kinetic energy. It is suggested that the AT_{100} (absolute topography) map be used for an objective analysis of the fronts and jet streams in the troposphere and lower stratosphere, which will also facilitate

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ACCESSION NR: AT5009164

an analysis of subtropical jet streams and the tropical tropopause (13-16 km altitude). The use of a set of weather maps covering successive altitudes, from the bottom up, is recommended in connection with an analysis of the atmospheric fronts. A second set of maps should provide information on the maximum horizontal temperature gradients and maximum horizontal cyclonic shear. Such data is important because the front direction convergence disappears at 500 millibars and the horizontal shear is the only indication of a front in the wind field. The final problem is to synthesize the information obtained in each stage of data processing. The wind velocity peaks corresponding to the jet streams may be easily found from an analysis of vertical wind profiles. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 14Oct64 ENCL: 00 SUB CODE: ES

NO REF SOV: 005 OTHER: 000

Card 2/2

ACC NR: AT6025881 SOURCE CODE: UR/0000/65/000/000/0048/0051

AUTHOR: Gubin, V. I. (Corresponding member AN UzSSR)

ORG: none

TITLE: A method of precalculation of horizontal components of wind in the atmosphere

SOURCE: AN UzSSR. Institut matematiki. Dinamicheskaya meteorologiya (Dynamic meteorology). Tashkent, Izd-vo Nauka UzSSR, 1965, 48-51

TOPIC TAGS: wind, wind direction, wind velocity, wind profile

ABSTRACT: A simple method for precalculation of horizontal wind velocity components in the atmosphere is described. In the method the inital horizontal velocity components are used to calculate their future component values. Motion equations for the plane case are found and the future horizontal wind components are calculated from the curl and the divergence of these equations by using finite time differences. All of the above calculations can easily be performed by a computer. Orig. art. has: 18 formulas.

SUB CODE: 04/ SUBM DATE: 14Dec65/ ORIG REF: 002

Card 1/1

ACC NR: AT6025882 SOURCE CODE: UR/0000/65/000/000/0052/0056

AUTHOR: Gubin, V. I. (Corresponding member AN UzSSR); Tillyashaykhova, R.

ORG: none

TITLE: A graphical method for evaluating the success of precalculation of isobaric surfaces

SOURCE: AN UzSSR. Institut matematiki. Dinamicheskaya meteorologiya (Dynamic meteorology). Tashkent, Izd-vo Nauka UzSSR, 1965, 52-56

TOPIC TAGS: meteorology, ~~meteorological charts~~, weather forecasting, atmospheric pressure

ABSTRACT: A graphical method for evaluating the accuracy of precalculated isobaric surfaces is described. The accuracy of the precalculated isobaric surfaces is found by plotting a difference field representing the difference between precalculated and actual fields; a blank plot would indicate a perfect accuracy. The accuracy of a precalculated prognosis for a two-level geopotential field is considered as an example. The calculated geopotential field for the example given was obtained by solving the theoretical equations by finite difference methods. Orig. art. has: 3 formulas and 3 figures.

SUB CODE: 04,12/ SUBM DATE: 14Dec65/ ORIG REF: 002

Card 1/1

ACC NR: AT6025883 SOURCE CODE: UR/0000/65/000/000/0057/0064

AUTHOR: Gubin, V. I. (Corresponding member AN UzSSR); Tillyashaykhova, R.

ORG: none

TITLE: Use of Green's functions for hydrodynamic weather prognosis

SOURCE: AN UzSSR. Institut matematiki. Dinamicheskaya meteorologiya (Dynamic meteorology). Tashkent, Izd-vo Nauka UzSSR, 1965, 57-64

TOPIC TAGS: weather forecasting, meteorology, Green function

ABSTRACT: An attempt is made to calculate the improper integral which is usually neglected in Green's functions. A pressure prognosis, found by use of equations developed by N. I. Buleyev and G. I. Marchuk, for a three-layer model of the atmosphere is given by considering and neglecting the above improper integral. It is seen that inclusion of the improper integral improves the correspondence between prognostacized and factual fields by O. Z. Height calculations of an isobaric surface are given as an example. Orig. art. has: 3 formulas and 3 figures.

SUB CODE: 04/ SUBM DATE: 14Dec65/ ORIG REF: 001

Card 1/1

ACC NR: AT7002608 SOURCE CODE: UR/0000/66/000/000/0018/0026

AUTHORS: Gubin, V. I. (Corresponding member AN UzSSR); Tillyashaykhova, R.

ORG: none

TITLE: Examples of forecasting the geopotential field from a four-level atmospheric model

SOURCE: AN UzSSR. Institut matematiki. Resheniye uravneniy gidrotermodinamiki primenitel'no k zadacham meteorologii (Solution of equations in hydrothermodynamics applied to problems in meteorology) Tashkent, Izd-vo FAN UzSSR, 1966, 18-26

TOPIC TAGS: atmospheric model, weather forecasting, weather map, atmospheric geopotential, integral equation, isobar

ABSTRACT: The authors forecast pressure for a four-level atmospheric model from the equation of N. I. Buleyev and G. I. Marchuk (O dinamike krupnomasshtabnykh atmosfernykh protsessov, Trudy Instituta fiziki atmosfery, No. 2, M., Izd-vo AN SSSR, 1958). The equation is used in the form:

$$\frac{\partial H}{\partial t} = \frac{c^2}{2\pi lg}\int_0^1\int_{-\infty}^{\infty} G_2 A_2\, dx'\, dy'\, d\zeta' - \frac{R}{2\pi g}\int_0^1\int_{-\infty}^{\infty} G_T A_T\, dx'dy'd\zeta'.$$

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The influence functions have the form:

$$G_a = \frac{1}{2\sqrt{\zeta\zeta'}}\left[\sigma\left(\ln\frac{\zeta}{\zeta'}, r\right) + \sigma\left(\ln\frac{1}{\zeta\zeta'}, r\right) + \right.$$
$$\left. + (1-2a)\, e^{-\left(\frac{1}{2}-a\right)\ln\frac{1}{\zeta\zeta'}} \int_{\ln\frac{1}{\zeta\zeta'}}^{\infty} e^{\left(\frac{1}{2}-a\right)z} \sigma\cdot(a, r)\, da \right];$$

$$G_r = -\zeta' \frac{dG_a}{d\zeta'}.$$

The surfaces AT_{850}, AT_{700}, AT_{500}, and AT_{300} were used as starting data. The calculation results are compared with the results obtained by the influence-function method with a three-level atmospheric model. Estimates of the success factors show that the three-level model has a certain advantage over the four-level. It is found that AT_{850} has the lowest correctness factors. Orig. art. has: 6 formulas, 2 tables, and 2 maps.

SUB CODE: 04, 12/ SUBM DATE: 26May66/ ORIG REF: 003

GUBIN, V.M., inzhener.

Properties of stainless chromium-nickel steel smelted in vacuum furnaces. Sbor. Inst. stali no.35:283-289 '56. (MLRA 10:8)

1. Kafedra elektrometallurgii.
(Steel, Stainless--Testing) (Vacuum apparatus)

GUBIN, V.N., inzh.; LOYCHENKO, V.I., mashinist-instruktor

Wheel slip current relay. Elek. i tepl.tiaga 2 no.4:22-23
Ap '58. (MIRA 12:3)
(Electric relays) (Electric locomotives)

GUBIN, V.N., inzh. (stantsiya Moskovka, Omskaya doroga); MAL'TSEV, S.S., mashinist elektrovoza (stantsiya Moskovka, Omskaya doroga)

More information pertaining to the emergency circuits for electric locomotives. Elek.i tepl.tiaga 3 no.11:41-42 N '59. (MIRA 13:3)

(Electric locomotives)

GUBIN, V.N., inzh. (Depo Moskovka, Omskaya doroga)

Means for extending the lifespan of antifrictional disks in electric locomotives. Elek.i tepl.tiaga. 4 no.6:15-17 Je '60. (MIRA 13:8)

(Electric locomotives) (Bearings (Machinery))

BOCHAROV, Yu.D., master kompleksnoy brigady; STEPANOVICH, M.G., master kompleksnoy brigady; GUBIN, V.N., inzh.

How we organized periodic repair of electric locomotives. Elek. i tepl. tiaga 4 no.11:1-6 N '60. (MIRA 13:12)
(Electric locomotives--Repairing)

GUBIN, V.N., inzh.; BABKOV, N.A., inzh.

Conclusions derived from the analysis of the operation of NB-406 traction motors. Elek. i tepl. tiaga 5 no.6:10-13 Je '61. (MIRA 14:10)

1. Depo Moskovka Zapadno-Sibirskoy dorogi.
(Electric railway motors)

GUBIN, V.N., inzh.

Radiator system for drying traction engines. Elek.i tepl. tiaga 5 no.10:13-14 O '61. (MIRA 14:10)

1. Lokomotivnoye depo Moskovka Zapadno-Sibirskoy dorogi.
(Electric railway motors—Maintenance and repair)
(Drying apparatus)

GUBIN, V.S., inzh.

Automation of ball mills operating on wet coal. Energetik 9 no.2:9-10 F '61. (MIRA 16:7)

(Coal) (Automatic control)

GUBIN, V.V.; MAKAROV, Yu.N.; AKSENOV, B.Ye.

Mine testing of coal extraction by means of chain saws. Ugol' 35 no.11:27-30 N '60. (MIRA 13:12)

1. Pechorskiy nauchno-issledovatel'skiy ugol'nyy institut (for Gubin, Makarov). 2. Glavnyy inzhener shakhty No.1-2 "Khal'mer-Yu" (for Aksenov).
(Coal mines and mining) (Coal mining machinery)

GUBIN, V.V.

Displacement of wall rock in mining coal with a wire line saw.
Vop. gor. davl. no.7:27-34 '61. (MIRA 18:7)

1. Sibirskiy metallurgicheskiy institut.