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RYABCHIKOV, A.M.

Geographical Faculty of the Moscow University on the eve of the 40th anniversary of the October. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 12 no.3:19-30 '57. (MIRA 10:12)
(Moscow University) (Geography)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

AUTHOR: Ryabchikov, A.M. SOV/10-58-5-23/28

TITLE: A Book on the Nature of Tibet (Kniga o prirode Tibeta)

PERIODICAL: Izvestiya Akademii nauk SSSR - Seriya geograficheskaya, 1958, Nr 5, pp 139-140 (USSR)

ABSTRACT: This is a review of a book by B.V. Yusov, entitled "Physico-Geographical Characteristics of Tibet", published in 1958 by Geografgiz, Moscow.

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GVOZDETSKIY, N.A.; RYABCHIKOV, A.M.; SOLOV'YEV, A.I.

Physical geography in the U.S.S.R. during the past 40 years. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 13 no.2: 211-220 '58. (MIRA 11:9)

(Physical geography)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.; LYUBUSHKINA, S.G.

All-Union scientific methodological conference of academic geographers. Vest. Mosk. un. Ser. biol., pochv., geol., geog. 13 no.2:271-275 '58. (MIRA 11:9)
(Geography--Congresses)

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SOV/10-59-4-22/29

3(5)

AUTHORS: Murzayev, E.M., and Ryabchikov, A.M.

TITLE: South-America - Physical Geography

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959, Nr 4, pp 146-147 (USSR)

ABSTRACT: This is a review the above-mentioned book on the physical geography of South America published by the Uchpedgiz Publishing House, Moscow, 1958.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

SOV/12-91-1-15/22

3(5)

AUTHORS: Ryabchikov, A.M., Skvortsov, Yu.A., Ratsek, V.I.

TITLE: N.L. Korzhenevskiy: In Memoriam (Pamyati Nikolaya Leopol'dovicha Korzhenevskogo)

PERIODICAL: Izvestiya Vsesoyuznogo geograficheskogo obshchestva, Vol 91, Nr 1, pp 91-93 (USSR) 1959.

ABSTRACT: This is an obituary on Professor N.L. Korzhenevskiy, scientist and explorer of polar regions and Central Asian deserts, Honorary Member of the Geograficheskoye obshchestvo SSSR (USSR Geographical Society) and President of its Uzbek branch, Corresponding Member of the Uzbek Academy of Sciences, and Head of the Kafedra fizicheskoy geografii Sredneaziatskogo universiteta im. V.I. Lenina (Department of Physical Geography of the Central Asian University imeni V.I. Lenin)

Card 1/1

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

BARANOV, A.N.; ZARUTSKAYA, I.P.; KUDRYAVTSEV, M.K.; RYABCHIKOV, A.M., prof.

The outstanding Soviet cartographer Konstantin Alekseevich Salishchev; his 60th birthday and 40th anniversary of his scientific activities. Vest. Mosk. un. Ser. 5: Geog. 20 no.5: 80-82 S-O '65. (MIRA 18:12)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M., prof.; SHCHUKIN, I.S.; SAUSHKIN, Yu.G., prof.; GVOZDETSKIY, N.A.; MARKOV, K.K.; ANUCHIN, V.A.; SOLNTSEV, N.A., doktor geogr. nauk

Senior Soviet Geographer; 1875- ; 90th birthday of Aleksandr Nikolaevich Dzhavakhishvili. Vest. Mosk. un. Ser. 5: Geog. 20 no.5:82 S-O '65. (MIRA 18:12)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

NIKOLAYEV, V.A.; RYABCHIKOV, A.M.

Arid landforms of Rajasthan. Izv. Vses. geog. ob-va 97 no.1: 4[illegible]-5[illegible] Ja-F '65. (MIRA 18:3)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.

India as seen by the Soviet geographers. Strany i nar. Vo. 6. no.3: 5-12 '64. (MIRA 17:11)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, I.M.

Interdependence of geographical sciences. Vest. Mosk. un. Ser. 5: Geog. 19 no.3:7-19 My-Je '64. (MIRA 17:6)

1. Kafedra fizicheskoy geografii zarubezhnykh stran Moskovskogo universiteta.

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

GERASIMOV, I.P.; RYABCHIKOV, A.M.

The head of Indian geography; on Professor S.P. Chatterjee's 60th birthday, 1903- . Izv. AN SSSR. Ser. geog. no.5:157-158 S-O '63. (MIRA 16:10)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

GVOZDETSKIY, N.A.; RYABCHIKOV, A.M.; SOUSHKIN, Yu.G.

In the Academic Council of the Geographical Faculty of Moscow University. Vest. Mosk. un. Ser. 5:Geog. 18 no.2:72-73 Ap '63. (MIRA 16:3)
(Moscow—Dissertations, Academic) (Geography)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

KORZHENEVSKIY, N.L.; DONTSOVA, Z.N.; KHASANOV, Kh.Kh., dots.; VASIL'KOVSKIY, N.P.; SKVORTSOV, Yu.A.; POSLAVSKAYA, O.Yu.; KOGAY, N.A., dots.; MAMEDOV, E.D.; AKULOV, V.V.; BABUSHKIN, L.N., prof.; SHUL'TS, V.L., prof.; GORBUNOV, B.V.; GRANITOV, I.I.; KOSTIN, V.P.; SMIRNOV, N.V., dots.; TSAPENKO, N.G., dots.; DEGTYAR', V.I.; CHERNOV, P.N.; MUKMINOV, F.G.; SELIYEVSKAYA, A.A.; RYABCHIKOV, A.M.; DALIMOV, N.D., dots.; LOBACH, Kh.S.; TADZHIMOV, T.; ARKAD'YEVA, A.N.; GAL'KOV, Ch.V.; SHTARKLOVA, S.I.; BESSONOV, M., red.; BAKHTIYAROV, A., tekhn. red.

[The Uzbek S.S.R.] Uzbekskaia SSR. Tashkent, Gos.izd-vo UzSSR, 1963. 483 p. (MIRA 16:8)
(Uzbekistan)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

BYKOV, V.D., red.; ZVONKOVA, T.V., red.; GLADKOV, N.A., red.; KOVALEV, S.A., red.; KOSOV, B.F., red.; MARKOV, K.K., red.; RYABCHIKOV, A.M., red.; SAUSHKIN, Yu.G., red.; SIMONOV, Yu.G., red.; KHRUSHCHEV, A.T., red.; BOKOVETSKIY, O.D., red.; KONOVALYUK, I.K., mladshiy red.; GOLITSYN, A.V., red.kart; KOSHELEVA, S.M., tekhn. red.

[Soviet geography during the period of the building of communism] Sovetskaia geografiia v period stroitel'stva kommunizma. Moskva, Geografgiz, 1963. 486 p. (MIRA 16:10)

(Geography)

APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8"

"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.; IGNAT'YEV, G.M.; MIKHAYLOVA, L.A.

Main trends in the study of the nature of foreign countries. Vest.Mosk. un. Ser. 5: Geog. 17 no.1:3-7 Ja-F '62. (MIRA 16:7)

1. Kafedra fizicheskoy geografii zarubezhnykh stran Moskovskogo universiteta.

(Physical geography)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.

Outstanding geographer of India; on Professor S.P.Chatterjee's birthday. Vest. Mosk. un. Ser. 5: Geog. 18 no.3:74-75 My-Je '63. (MIRA 16:6)

(Chatterjee, S.P., 1903-)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

ACC NR: AP7003025 SOURCE CODE: UR/0203/66/006/004/0703/0706

AUTHOR: Arof'yeva, A. V.; Korpusov, V. N.; Lysenko, I. A.; Orlyanskiy, A. D.; Ryabchikov, A. N.; Shuvarikova, N. F.

ORG: Institute of Applied Geophysics (Institut prikladnoy geofiziki)

TITLE: Results of a study of the wind regime in the meteor zone by the radar method

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 4, 1966, 703-706

TOPIC TAGS: atmospheric wind, meteorologic radar, signal to noise ratio

ABSTRACT: The method and results are presented of a study of wind circulation in the upper atmosphere conducted during the first half of 1964 near Moscow (56° N). The wind circulation was measured by radar tracking of meteor trail drifts at altitudes of 85—110 km.

The radar equipment used in the measurements had a coherent pulse output modulating a 33-Mc carrier. The pulse duration, repetition frequency, and power were 10 μsec, 500 cps, and approximately 100 kw, respectively. A form of coding was used in which every fifth pulse was distinct. A two stack transmitting antenna consisting of four 5-element Yagi antennas was employed. The receiver antenna had only one 5-element section. The

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receiver sensitivity thus achieved was 2—3 μv at a signal-to-noise ratio of two. The display and recording equipment was triggered by the received pulses and was protected from spurious noise by 1) utilization of the coincidence of two consecutive marker pulses for correlating purposes, 2) preselection by repetition frequency discrimination, and 3) spurious signal suppression using a special detuned noise receiver. The displayed frames were filmed. Each frame contained information on the distance from the point of reflection of the transmitted pulse, the meteor echo diffraction pattern, the Doppler shift pattern, the date and time, and the antenna direction.

The horizontal component of the unit velocity of meteor trail movement was obtained from direct readings of the radial trail velocity components as recorded by the Doppler shifts. The direction of meteor trail movements was determined from the Doppler shift phase difference obtained at the outputs of two phase detectors in which the reference signals were approximately in quadrature.

The drift velocity readings had considerable fluctuations and, for this reason, were averaged on an hourly basis. The averages were used to study diurnal wind pattern changes. In order to secure meaningful averages using the equipment at hand (based on at least 50 measurements/hr),

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measurements were made alternately, first in the NS and then in the EW directions. The results obtained at the same time of day but for different days were combined. Thus, about 7000—9000 individual readings were recorded during one 5—7 day measurement session.

On the basis of the observation results, it was established that the magnitude and direction of winds varied from day to day and from month to month. The experimental curves of wind velocities were anlayzed by Fourier series. i. e., they were reduced to a constant component and three harmonics (corresponding to 24-, 12-, and 8-hour variations). The second harmonic was predominant. The velocities of the zonal wind components attained maximum values of 20—30 m/sec in April and June. These velocities were lowest during January and March (1—5 m/sec); during February and May they were 12—15 m/sec. The direction varied from easterly during February and March to westerly during the April—May period, and again to easterly in June. The meridian wind components were directed to the south during every month except March. The magnitudes of these components varied from 5 to 18 m/sec; the maximum was observed in March.

Comparison of these results with the published data from similar studies at Manchester and Khar'kov established that similarities exist in

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ACC NR: AP7003025

the monthly variations and that in all three cases the wind velocities decrease during spring and summer. The curves of the meridian wind components exhibit certain similarities, but the zonal component curves show closer agreenment. The data are different when the relative magnitudes of the wind velocities for the three locations are considered. Both wind components at Manchester were weaker than those studied in the USSR. This is attributed to the different climatological conditions at the points of observation and to the different times of observation with respect to the 11-year solar activity cycle. Orig. art. has: 3 figures. [FSB: v. 2, no. 10]

SUB CODE: 04,07 / SUBM DATE: 29Mar65 / ORIG REF: 004 / OTH REF: 003

Card 4/4

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

ACC NR: AP6028952 SOURCE CODE: UR/0121/66/000/008/0009/0013

AUTHORS: Ryabchikov, A. N.; Tikhonov, V. M.; Simkin, D. I.

ORG: none

TITLE: Atomizing device for lubricant-coolant fluids

SOURCE: Stanki i instrument, no. 8, 1966, 9-13

TOPIC TAGS: atomization, atomizer, cutting fluid/ UR-3 atomizer, UR-3A atomizer, UR-3M atomizer

ABSTRACT: Atomizing apparatus UR-3 (Author Certificate No. 152162) for water-based lubricant-coolant fluids is described in detail, and some performance curves and calculations are presented. The apparatus was developed at NILSI at Gorkiy Polytechnic Institute imeni A. A. Zhdanov (NILSI pri Gor'kovskom politekhnicheskom institute) and is schematically shown in Fig. 1; details of the distributor and mixer systems for models UR-3, UR-3A, and UR-3M are presented in the report. The major feature of this device is the absence of throttling slits in the fluid passages, with fluid flow control accomplished by distribution of the air flow. This permits minimum fluid passage dimensions of 2.5--3.5 mm that are large enough to prevent clogging (a common problem in atomizers with fluid throttling controls). The apparatus has a capacity of up to 500 g/hr of water-based lubricant with as little as 3 g/hr of atomized lubricant flow.

UDC: 621.91.079:621.892/-729:66.069.82

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ACC NR: AP6028952

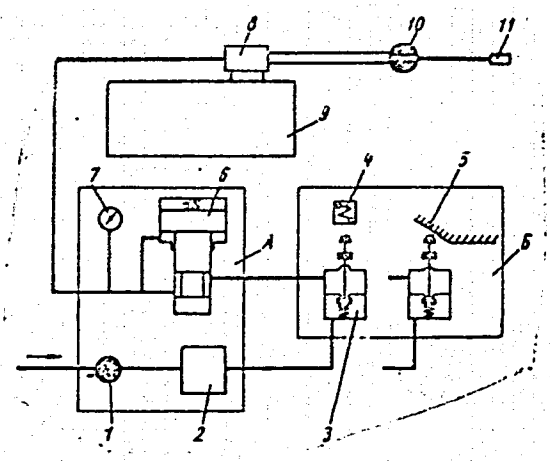

Fig. 1. Schematic diagram of UR-3 lubricant atomizer. 1 - valve; 2 - filter-dehumidifier; 3 - three-way valve; 4 - solenoid; 5 - cam; 6 - air pressure regulator; 7 - manometer; 8 - distributor; 9 - tank; 10 - mixer; 11 - nozzle

Orig. art. has: 7 figures and 4 formulas.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 009

Card 2/2

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

ALEKHINA, V.I.; RYABCHENKO, S.N.; LISIN, D.M.

Distribution of germanium during the pyrolysis of enriched coals. Trudy Khim.-met.inst.Sib.otd. AN SSSR no.18:139-144 '63.

Problem of the distribution of germanium during the pyrolysis of coal. Ibid.:145-150 (MIRA 17:4)

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RYABCHIKOV, A.M.

Courses of development of the study of geography in universities.
Vest.Mosk.un.Ser.5 Geog. 15 no.1:5-14 '60. (MIRA 13:8)
(Geography--Study and teaching)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.

"Physicogeographical features of Burma" by A.A. Tolokonnikova. Reviewed by A.M. Riabchikov. Vest.Mosk. un. Ser. 5: Geog. 15 no.4:69-70 Jl - Ag '60 (MIRA 13:9)
(Burma--Physical geography)
(Tolokonnikova, A.A.)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

BYKOV, V.D., red.; KOSOV, B.F., red.; LAZUKOV, G.I., red.; MARKOV, K.K., red.; RYABCHIKOV, A.M., red.; SAUSHKIN, Yu.G., red.; YANIKOV, G.V., red.; CHERNYKH, M.P., mladshiy red.; MAL'CHEVSKIY, G.N., red.kart; VILENSKAYA, E.N., tekhn.red.

[Methodology of geographical studies] Metody geograficheskikh issledovanii; sbornik statei. Moskva, Gos.izd-vo geogr.lit-ry, 1960. 388 p. (MIRA 13:12)

1. Moscow. Universitet. 2. Kafedra gidrologii sushi Moskovskogo gosudarstvennogo universiteta (for Bykov). 3. Kafedra geomorfologii Moskovskogo gosudarstvennogo universiteta (for Kosov). 4. Kafedra obshchego zemledeliya Moskovskogo gosudarstvennogo universiteta (for Lazukov, Markov). 5. Kafedra fizicheskoy geografii zarubezhnykh stran Moskovskogo gosudarstvennogo universiteta (for Ryabchikov).
(Geography--Study and teaching)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.

General features of geographical land zonation. Vest.Mosk. un. Ser. 5: Geog. 15 no.4:26-31 Jl - Ag '60. (MIRA 13:9)

1. Kafedra fizicheskoy geografii zarubezhnykh stran Moskovskogo universiteta.
(Physical geography)

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RYABCHIKOV, A.M.

"Western India; an economic geography" by L.A. Kniazhinskaia. Vest. Mosk. un. Ser.5:75 Geo. 15 no.3:75 My - Je '60. (MIRA 13:7)

(India--Economic geography)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A. M.

"General Regularities of the Geographical Zonality of the Land of the Whole Earth"

report to be submitted for the Intl. Geographical Union, 10th General Assembly and 19th Intl. Geographical Congress, Stockholm, Sweden, 6-13 August 1960.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.M.

Papers submitted for the 10th Pacfic Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

NAGIBINA, M. S., Institute of Geology - "Mesozoic depressions and troughs of east Asiatic type and their position in the systematics of tectonic forms" (Section VII.C)

NELEPO, B. A., Moscow State University, Physical Faculty - "The gamma-ray spectrometric measurements of artificial radioactivity in upper layers of the ocean" (Section VII.B.6)

NESTEROV, V. G., Chair of Forestry, The Agricultural Academy imeni K. A. Timiryazev - "Forest fire research and methods of fire control" (Section V.B)

OSTROUMOVA, T. A., Institute of Oceanology - "Biogeographical and morphological analysis of reproduction and development of flatfish in the seas of the northwest Pacific" (Section III.C)

OZMIDOV, R. V., Institute of Oceanology - "Investigation of the horizontal turbulent exchange in the Pacific Ocean" (Section VII.B)

PARIN, N. V., Institute of Oceanology - "Regularities in the geographical distribution of flying fishes in the Pacific Ocean" (Section VII.C)

PERGAMENT, M. A., Institute of Geology - "Stratigraphic horizons in the cretaceous deposits of Kamchatka" (Section VII.C)

PETELIN, V. P., Institute of Oceanology - "The processes of recent sedimentation in the western part of the equatorial zone in the Pacific" (Section VII.C.1)

PETRUSHEVSKIY, B. A., Institute of Earth Physics imeni O. Yu. Schmidt - "The seismic geological conditions in the northwestern outlying area of the Pacific basin" (Section VII.C.2)

PONOMAREVA, L. A., Institute of Oceanology - "Euphausiidae in the northern part of the Pacific" (Section III.C)

PORTENKO, L. A., Institute of Zoology - "The problem of the Bering land bridge from the zoological point of view" (Section III.A.8.a)

PUSHCHAROVSKIY, Yu. M., Institute of Geology - "Some specific features in the tectonics of the north part of the Pacific belt" (Section VII.C)

PYRKIN, U. R., Moscow State University, Physical Faculty - "A new deep-sea device for recording currents ('MGU')" (Section VII.B.5)

RADKEVICH, Ye. A., Institute of Geology - "On the stability and inheritance of structural elements in the frame of the Pacific Ocean depression" (Section VII.C)

RASS, T. S., OSTROUMOVA, T. A., and GORBUNOVA, N. N., Institute of Oceanology - "Geographical regularities in regard to reproduction and development of mass fishes in the northern part of the Pacific" (Section III.C)

ROMANKEVICH, Ye. A., Institute of Oceanology - "Organic substance in bottom sediments in the western part of the Pacific" (Section VII.C.1)

RUDICH, Ye. N., Institute of Earth Physics imeni O. Yu. Schmidt - "Relations between deep focus earthquakes in the eastern margin of Asia and large structures of the earth crust" (Section VII.C.2)

RYABCHIKOV, A.M., Moscow State University, Geographical Faculty - "The structure of natural zonatic in east Asia" (Section VI.C)

RYKUNOV, L. N., Moscow State University, Physical Faculty, Chair of Hard Crust - "The correlative method for studying microseism" (Section VII.C.2)

SAYDOVA, Kh. M., Institute of Oceanology - "The distribution of bottom lime Foraminifera in the northern part of the Pacific and its use for the reshaping of the paleorelief" (Section VII.C.1)

SAMOYLENKO, V. S., Institute of Oceanology - "Problems concerned with the theory of formation of the temperature regime in seas and oceans" (Section VII.A)

SEMINA, G. I., Institute of Oceanology - "Biogeographical zonation of the Pacific Ocean in regard to phytoplankton" (Section III.A)

SEROVA, M. Ya., Institute of Geology - "Paleogene Formanifers of Kamchatka" (Section VII.C)

SAVILOV A I

SEVILEV, A. Y., Institute of Oceanology - "Velella and Physalia in the pleiston of the Pacific" (Section III.C)

SHEYNMAN, U. M., Institute of Earth Physics imeni O. Yu. Schmidt - "Mechanism of ocean-magnes (?) origin" (Section VII.C.2)

SHOSHIN, A. A., The Central Organization of Leningrad - "The main problems of human illness geography and their significance for prophylactic medicine" (Section VII.B.4)

SHUMSKIY, P. A., Institute of Permafrost Studies - "Glaciology of Antarctica" (Section VII.D.1)

SYDOYEV, N. N., Institute of Oceanology - "Methods for measuring deep currents in the ocean and some results of their application in the Pacific Ocean" (Section VII.B.5)

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ALEKSANDROVSKAYA, Nataliya Vital'yevna; YERAMOV, Ruben Artemovich; IGNAT'YEV, Grigoriy Mikhaylovich; LUKASHOVA, Yevgeniya Nikolayevna; MARKOV, Konstantin Konstantinovich; MIKHAYLOVA, Lyudmila Alekseyevna; RYABCHIKOV, Aleksandr Maksimovich, prof.; SHAGIROVA, I.M., red.izd-va; YEZHOVA, L.L., tekhn. red.

[Physical geography of parts of the world] Fizicheskaia geografiia chastei sveta. [By] N.V.Aleksandrovskaia i dr. Moskva, Gos.izd-vo "Vysshaia shkola." 1963. 546 p. (MIRA 17:1)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

GORDON, M.B.; RYABCHIKOV, A.N.; PODGORKOV, V.V.; FEDULOV, I.G.

Automation of units supplying atomized fluid to cutting area.
Stan.i instr. 33 no.2:30-31 F '62. (MIRA 15:1)
(Metalworking lubricants)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, Aleksandr Nikolayevich; EL'TERMAN, V.M., redaktor; NOVOSPASSKIY, V.V., redaktor; KIRSANOVA, N.A., tekhnicheskiy redaktor.

[Automatic control of ventilation, humidity and heat in textile factories] Avtomaticheskoe regulirovanie ventiliatsii uvlazheniia i otopleniia na tekstil'nykh fabrikakh. [Moskva] Izd-vo VTsSPS Profizdat, 1955. 91 p. (MLRA 9:4)
(Textile industry--Heating and ventilation)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.N. (Ivanovo)

Level regulator. Vod. i san. tekh. no.6:29-30 Je '59.
(MIRA 12:8)
(Water-supply engineering) (Liquid level indicators)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.N., inzhener

Gasketless pressure regulator. Prom.energ. 12 no.9:10-12 S '57. (MIRA 10:10)

(Textile machinery)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A. N. PA 161T63

USSR/Engineering - Control, Automatic Mar 50
Moisture
Textiles

"Pneumatic Moisture System With Automatic Control," A. N. Ryabchikov, A. M. Durnov, 2 pp

"Prom Energet" No 3

Describes system in detail, including line diagram and sketch showing cross section of nozzle. Designed by the Automatics Div, All-Union Sci Res Inst for Protection of Labor, working in conjunction with Textile Factory imeni Worker Fedor Zinov'yev.

FDD 161T63

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A.N., inzhener.

Automatizing pneumatic humidification systems. Tekst.prom.17 no.2: 46-47 F '57. (MLRA 10:2)

(Textile industry)

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, A. N. I SNOLOVSKAYA, T. N.

28438

V yentili S elyektromagnitnym privodom (Vyentilyatsionno - uvlazhnityelbnykh ustanovok). Tyekstil. Prom-stv, 1949, No 9, S. 38-40

SO: LETOPIS No. 34

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, D. I.

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CA

Zhur. Prik. Khim.

Preparation of anhydrous chlorides of certain heavy metals. D. I. Ryabchikov and V. M. Shul'man. *J. Applied Chem.* (U. S. S. R.) 7, 1162-5(1934).—$MnCl_2$, $NiCl_2$ and $CoCl_2$ were obtained by dehydration in a stream of HCl after repeated recrystn. of the crystal hydrates, while $FeCl_2$ was obtained by direct action of HCl on the metal. $CrCl_2$ was prepd. either by the joint action of CO and Cl_2 on Cr_2O_3 or by the action of Cl_2 on a mixt. of Cr_2O_3 and animal charcoal. A. A. Bochtlinck

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

The strength of geometrically isomeric bases. A. A. Grinberg and D. [illegible] Kyabchikov. *Acta Physicochim. U. R. S. S.* 3, 555-72(1935)(in German); cf. *C. A.* 30, 3701[9].—Colorimetric detn. of *pH* showed that the *trans*-

base is more strongly alk. than the *cis*-base, especially at the higher concns. The addn. of salts contg. anions capable of forming complexes to solns. of the *trans*-base caused a decided increase in the alky., which decreases in the order I^-, CNS^-, Br^-, Cl^-, SO_4^{--} and NO_3^-. The NO_3 ion cannot displace the OH ions, but the reverse reaction $[Pt(NH_3)_2(NO_3)_2] + 2NaOH = [Pt(NH_3)_2(OH)_2] + 2NaNO_3$ goes to completion, and the Pt content, detd. by titration with NaOH, checked with the detn. with $KMnO_4$ by the method of Grinberg and Ptitzyn (*C. A.* 28, 3333[9]). Titration with the glass electrode showed that the first and second hydroxyls of the *trans*-base are very different, with the consts. $K_1 = 0.63 \times 10^{-7}$ and $K_2 = 1 \times 10^{-10}$, resp. The *cis*-base has an av. value of 0.16×10^{-7} for K_1 but the sep. consts. could not be calcd. The effect of the positions of the OH groups on the properties of these bases is compared to the effect of geometrical isomerism on the acidities of fumaric and maleic acids, resp.

E. R. Rushton

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PROCESSES AND PROPERTIES INDEX

BC

a-1

Strength of isomeric bases of the type $[Pt(NH_3)_2(OH)_2]$. A. A. GRÜNBERG and D. I. RJABTSCHIKOV (Compt. rend. Acad. Sci. U.R.S.S., 1935, 4, 259—262).—Titration of the *cis*-compound with 0·1*N*-HCl at room temp. gives a colour change with Me-red when 80% of the theoretical amount of acid has been added owing to the formation of the weak acid $[Pt(NH_3)_2(H_2O)_2]^{++}$. The change $[Pt(NH_3)_2(H_2O)_2]Cl_2 \rightarrow [Pt(NH_3)_2Cl_2]+2H_2O$ occurs on warming and the theoretical end-point may be attained. The *trans*-compound gives an end-point at room temp. corresponding with 50% of the theoretical amount of acid and this is attributed to the formation of $[Pt(NH_3)_2(H_2O)(OH)]Cl$. The final titration val. is obtained on warming. R. S.

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ansh-Bulat sulfate lake, and the possibilities of its exploitation. A. B. Zdanovskii and D. I. Ryabchikov. *J. Applied Chem.* (U. S. S. R.) 8, 931-93(1935).—The H_2O contains 17.4% of solutes, chiefly Na_2SO_4 6.9, $MgSO_4$ 2.5 and NaCl 7.6%. $Na_2SO_4.10H_2O$ crystallizes out over the range 16° to −5°, and the mother liquors yield 80 kg. of NaCl per ton when concd. at 25° and then cooled to −10°. The final filtrates can be further concd for the prepn. of $MgCl_2$ and Br. ... B. C. A.

Zhur. Prikl. Khim.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

The strength of the isomeric bases of the type $[Pt(NH_3)_2(OH)_2]$. A. A. Grinberg and D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* [N. S.] 4, 259-62 (1936) (in German). – Titration of $[Pt(NH_3)_2Cl_2]$ with 0.1 *N* NaOH, with phenolphthalein, gave approx. theoretical results from the amt. of Pt. This is attributed to hydrolysis according to the equation $[Pt(NH_3)_2Cl_2] + 2H_2O = [Pt(NH_3)_2(OH_2)_2]Cl_2 = [Pt(NH_3)_2(OH)_2] + 2HCl$. When a soln. of $Pt(NH_3)_2(OH)_2$ is titrated with 0.1 *N* HCl in the cold, with methyl red as indicator, the rose color appears after the addn. of 80% of the acid theoretically required. When the soln. is heated, it turns yellow again and can be titrated to 98%. With thymol blue, the soln. can be titrated completely. These results indicate the following reaction

$$\begin{bmatrix} NH_3 & OH \\ & Pt \\ NH_3 & OH \end{bmatrix} + 2HCl = \begin{bmatrix} NH_3 & H_2O \\ & Pt \\ NH_3 & H_2O \end{bmatrix} Cl_2 = \begin{bmatrix} NH_3 & Cl \\ & Pt \\ NH_3 & Cl \end{bmatrix} + 2H_2O.$$

The soln. becomes basic to methyl red on warming owing to the second part of this reaction. On titrating the isomeric base $\begin{bmatrix} NH_3 & OH \\ & Pt \\ OH & NH_3 \end{bmatrix}$ with acid, the rose color appears much earlier than with the *cis*-isomer, and on heating, the yellow color returns and the base can be titrated to completion. This shows that the *trans*-isomer represents a much stronger base and the difference between the first and second hydroxyl is much sharper than in the *cis*-base. This was confirmed by potentiometric titration with a glass electrode. When the *trans*-base is half-titrated in the cold with phenolphthalein or thymol blue, the compd. $\begin{bmatrix} OH & NH_3 \\ & Pt \\ NH_3 & H_2O \end{bmatrix} Cl$ is obtained. This hydrolytic titration can be applied to K_2PtCl_4 in dil. soln. and at the b. p.; otherwise $Pt(OH)_2$ seps. The color change of the indicator is less pronounced because of the color of the salt. E. R. Rushton

Dokl. AN SSSR.

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RYABCHIKOV, D. I.

"Potassium Salts in Aktyubinsk District of USSR," N.I.Buyalov, I.N.Lepeshkov, and D.I.Ryabchikov, Kaliy, No.1, pp 5-11, 1937.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

RYABCHIKOV, D. I.

"Potassium Salts in the Region of Inder Lake of Western Kazakhstan," N.S.Kurnakov, N. I. BUyalov, I. N. Lepeshkov, and D. I. Ryabchikov, Kaliy, No. 5-6, pp.5-18, 1937.

Description. 20 references.

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

The use of amidimetric titrations for the determination of the constitution of complex compounds. A. A. Geinberg and D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 14, 119-22(1937)(in German); cf. *C. A.* 31, 1000P. — $[Pt(NH_3)_4]^{++}$ can be oxidized more easily than $[Pt(NO_2)_4]^{--}$ and $[Pt(CN)_4]^{--}$, and in some cases it is possible by varying the temp. to sep. the combined potential break of 2 reducing agents into 2 parts. Attempts were made to test the correctness of the Werner coordination formula for the polymeric salts of the type of the green salt of Magnus by titration with $KMnO_4$ and with $KBrO_3$ at room temp. and at 85°. The visual titration of the cyanogen analog of Magnus' salt, $[Pt(NH_3)_4][Pt(CN)_4]$, showed that only half of the Pt in this compd. could be oxidized readily with $KMnO_4$; the slow reaction of the 2nd half of the Pt is characteristic of the tetracyanoplatinite, $M_2[Pt(CN)_4]$. The potentiometric titration yielded 2 distinct breaks, the first due to the completion of the oxidation of $[Pt(NH_3)_4]^{++}$ and the second to that of $[Pt(CN)_4]^{--}$. A comparison of the titration curve of $[Pt(NH_3)_4][Pt(CN)_4]$ with that of $Pt(NH_3)_2(CN)_2$ gives addnl. evidence for this constitution; the titration curve of the monomer contains only one break, which by its position gives the total Pt content of the compd. In titration of the cyanogen complex, $KMnO_4$ soln. must be added gradually in small amts., to avoid the induced oxidation of the cyanogen radical. After all the Pt has been oxidized any addnl. $KMnO_4$ is slowly decolorized, probably by the cyanogen radical. The potentiometric titration of $[Pt(NH_3)_4][PtBr_4]$ in the cold with $KBrO_3$ in HCl soln. yields a break which corresponds to the total Pt content. At 85-90° there are 2 breaks, corresponding to the end of the titration of $[Pt(NH_3)_4]^{++}$ and of that of $[PtBr_4]^{--}$. Such a division of the breaks can be proved directly as follows: On titrating the HCl soln. of $[Pt(NH_3)_4][PtBr_4]$ with $KBrO_3$ up to the

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RYABCHIKOV, D. I.

"Potassium Deposits of the Southern Basin of the Permian Sea and the Salt Lakes of Western Kazakhstan," N.S. Kurnakov, I.N.Lepeshkov, D.I. Ryabchikov, and N.I.Buyalov, Iz. Ak. Nauk SSSR, Ser. KHim., No.1, pp 13-32, 1938.

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BC

A-1

Potentiometric titration of complex compounds with several oxidisable components. A. A. GRÜNBERG and D. J. RJABTSCHIKOV (Acta Physicochim. U.R.S.S., 1936, 6, 773—786; cf. A., 1937, I, 246).—Complex Pt^{II} compounds containing HC_2O_4' or C_2O_4'' groups were titrated potentiometrically with $KBrO_3$ in aq. HCl. At suitable temp., the titration curves show two breaks with $[Pt(NH_3)_2(C_2O_4)]$ (I) and $K_2[PtCl_2(C_2O_4)]$ (II), three with $[Pt(NH_3)_2(HC_2O_4)_2]$ (III) and $K_2[Pt(C_2O_4)_2]$ (IV), and four with $[Pt(NH_3)_4][Pt(C_2O_4)_2]$ (V). It is shown by chemical analysis that in (I) and (II) the Pt^{II} is first oxidised to Pt^{IV}, and afterwards the (C_2O_4). In (III) and (IV) the same order is followed, but the two (HC_2O_4) or (C_2O_4) groups are oxidised in separate stages. In (V) the two Pt atoms are first oxidised, then the two (C_2O_4) groups, all in separate stages. If the (C_2O_4) does not form part of the complex, as in $[Pt(NH_3)_4]C_2O_4$, only a single break corresponding with $Pt + (C_2O_4)$ is obtained. The stepwise oxidation of the two HC_2O_4 or C_2O_4 groups is attributed to strengthening of the linkage of the group which is *trans* to the one first attacked owing to the asymmetry caused by substituting Cl for the latter. F. L. U.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

The strength of isomeric bases of bivalent platinum

D. I. Ryabchikov. *Ann. secteur platine, Inst. chim. gén.* (U. S. S. R.) No. 15, 35-62(1938).—Treatment of cis- and *trans*-$Pt(NH_3)_2Cl_2$ with AgOH or Ag_2SO_4 and $Ba(OH)_2$ fails to give the pure bases, $Pt(NH_3)_2(OH)_2$. These can be obtained by titrating the chlorides with NaOH in the presence of phenolphthalein in hot soln. and this method can be used for the analysis of the chlorides. The reaction goes through the intermediate aquo forms $[Pt(NH_3)_2(H_2O)_2]Cl_2$ and $[Pt(NH_3)_2(H_2O)_2](OH)_2$. I and SCN ions, and to a smaller degree Br and Cl ions, tend to enter the inner sphere of the complexes, while NO_3 and SO_4 ions have no such tendency. Hence, the purest bases can be obtained by titrating $Pt(NH_3)_2(NO_3)_2$ with NaOH. The nitrate can be prepd. from the chloride by treatment with $AgNO_3$, but the reaction is slow. The dissocn. consts. for the 1st OH in 0.005 *M* soln. at 12-13° are 0.03×10^{-7} for the cis isomer and 0.11×10^{-7} for the trans. In potentiometric titration the cis isomer behaves as a monatomic base, but the trans base, owing to the labilizing influence of the trans effect, gives a 2nd dissocn. const. of 1.25×10^{-11}. The differences in behavior of these isomers and maleic and fumaric acids are explained on the basis of the trans effect in Pt compds.

H. M. Leicester

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PROCESSES AND PROPERTIES INDEX

Thiosulfate complexes of bivalent platinum. I. D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 18, 39-42 (1938) (in German).—$Na_2S_2O_3$ (I) reacts with K_2PtCl_4 50° to give $Me[Pt(S_2O_3)_4]$ (II). $BaCl_2$ reacts with II to give $Ba_2[Pt(S_2O_3)_4]$. With $[Pt4NH_3]Cl_2$, II gives $[Pt(S_2O_3)_4][Pt4NH_3]_2$. A satd. soln. of I reacts with $[Pt4NH_3]Cl_2$, $[Pt4Py]Cl_2$, $[Pt4Thi]Cl_2$, and $[Pt2NH_32Thi]Cl_2$ to give yellow ppts. of the type $[Pt4A]S_2O_3$, where A = NH_3, Py, etc.

W. J. Peterson

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CA

Zhur. Prik. Khim. 7

Determination of iron by the method of potentiometric titration. D. I. Ryabchikov and V. G. Sil'nichenko. *J. Applied Chem.* (U. S. S. R.) 12, 1907-11(in French, 911)(1939).—The soln. is reduced with a soln. of Cu_2Cl_2 (about 0.1 g.) in 2-3 ml. of a satd. soln. of NaCl and acidified slightly with HCl. The titration with $KMnO_4$ will be accompanied by (1) the oxidation of the excess reducing agent and (2) the oxidation of the reduced Fe. The first break in the titration curve will be at 300 to 400 mv.; the second break is at 650 to 800 mv. These values apply only to samples high in Fe. The potentials will be considerably lower at low Fe content. A. A. B.

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PROCESSES AND PROPERTIES INDEX

Determination of gold by potentiometric titration D. I. Ryalchikov and G. V. Knyazheva. *Compt. rend. acad. sci. U. R. S. S.* **25**, 601-4 (1939) (in English). The Au is dissolved in aqua regia and, after addn. of twice the quantity of NaCl to form $NaAuCl_4$, is treated in the usual manner to remove excess HNO_3 and HCl. After dilu. the Au is detd. potentiometrically in a current of CO_2, by use of a Au wire electrode and slowly adding hydroquinone soln. until a sharp break in potential occurs. Heating to 60-70° and slight acidification with HCl (5 cc. of 1:4 acid to 200 cc. of soln.) improve the results; if the Au is deposited in a colloidal state the $C_6H_4(OH)_2$ has probably been reduced farther than $C_6H_4O_2$ and the results must be discarded. Instead of the hydroquinone soln. a soln. of Mohr's salt may be used; in both cases the metallic Au makes its appearance after approx. two-thirds of the necessary quantity of reducing agent has been added. Ir is the only member of the Pt group which interferes; the pptd. Au can be titrated with $KMnO_4$ soln. and the Ir detd. by difference. George Ayers

Dtl. AN SSSR

Inst. of Gen. and Inorganic Chem. Mem. A9, c1939-

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PROCESSES AND PROPERTIES INDEX

Ca

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Aush-Bulat mirabilite lake. A. V. Zhdanovskii and D. I. Ryabchikov. *Ann. secteur anal. phys. chim., Inst. chim. gén.* (U. S. S. R.) 13, 353-75(1940).—Analytical data are recorded. The brine is of the sulfate type. During the winter months mirabilite is deposited in very large amt. from the lake water. Methods of utilizing the residual brine for prepn. of $MgCl_2$ and bromides are discussed.

B. C. P. A.

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A

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Products of the interaction of thiosulfate with potassium chloroplatinite II. D. I. Ryabchikov.—*Compt. rend. acad. sci. U. R. S. S.* 27, 349-52(1940)(in English); cf. *C. A.* 32, 3720[4].—Bivalent Pt forms various $S_2O_3^{--}$ stable complexes. The mol. ratio of the reactants dets. which is formed. Pt compds. with 1-4 $S_2O_3^{--}$ for each Pt were obtained. Where the amt. of $S_2O_3^{--}$ is deficient, 2 coordination positions are occupied by the ion, being linked to the Pt through both S and O. J. C. Lo Cicero

Nos. 4, 7.

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CA

Mixed thiosulfate-thiourea compounds of bivalent platinum. D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 27, 683-97(1940)(in English).—A mixt. of K_2PtCl_4 (1 g. in aq. soln.) and $Na_2S_2O_3.5H_2O$ (0.5976 g. in aq. soln.) was allowed to stand 3 hrs. at room temp., then thiourea (0.3664 g. in aq. soln.) was added; the voluminous light-yellow ppt. changed during 48 hrs. into fine crystals of $[Pt(SC(NH_2)_2)_2S_2O_3].2H_2O$, a nonelectrolyte, which loses $2H_2O$ at 105°. Admixture of solns. of thiourea (0.3664 g.) and K_2PtCl_4 (1 g.) caused instant pptn. of orange cryst. *trans*-$[Pt(SC(NH_2)_2)_2Cl_2]$ (I); upon addn. of 0.5976 g. $Na_2S_2O_3.5H_2O$ the ppt. dissolved and then the soln. deposited lemon-yellow cryst. *trans*-$[Pt(SC(NH_2)_2)_2H_2OS_2O_3].2H_2O$ (II), which loses $2H_2O$ at 105°. II can be formed directly by addn. (in the same proportions) of a mixt. of $Na_2S_2O_3$ and thiourea to K_2PtCl_4 soln. Treatment of a mixt. of K_2PtCl_4 (1 g. in aq. soln.) and $Na_2S_2O_3.5H_2O$ (0.5976 g. in aq. soln.) with thiourea (0.55 g. in aq. soln.) gave a clotty yellowish ppt., which slowly formed cryst. $[Pt(SC(NH_2)_2)_2S_2O_3]$. $Na_2S_2O_3.5H_2O$ was added to I and the mixt. left on the water bath; the electrolyte $Na_2[Pt(SC(NH_2)_2)_2(S_2O_3)_2]$ (III), which reacts with the $[Pt(SC(NH_2)_2)_4]Cl_2$ present in the soln., forming golden-yellow cryst. $[Pt(SC(NH_2)_2)_4][Pt(SC(NH_2)_2)_2(S_2O_3)_2]$. Addn. of KCl to the soln. of III, followed by vigorous shaking and addn. of EtOH, resulted in pptn. of the light-yellow, water-sol. *trans*-K analog of III. Deliquescent cryst. III.$6H_2O$ was formed by adding alc. to a soln. formed by the addn. of a soln. of 2.38 g. $Na_2S_2O_3.5H_2O$ and 0.734 g. thiourea to 2 g. K_2PtCl_4 in aq. soln. and evapg. the pptd. yellow oil over H_2SO_4. Interaction of III.$6H_2O$ with $[Pt(NH_3)_4]Cl_2$ gave yellow $[Pt(NH_3)_4][Pt(SC(NH_2)_2)_2(S_2O_3)_2]$.

George Ayers

Nos. 4, 7.

Inst. General and Inorg. Chem. Acad. Sci. Moscow c1940-.

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CA

Products of interaction of platinum tetrammine chlorides with thiosulfate. D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 27, 690-3(1940)(in English).—Light-cream-colored plates of slightly sol. $[Pt(NH_3)_4][S_2O_3]$ were immediately pptd. on mixing satd. solns. of $[Pt(NH_3)_4]Cl_2$ and $Na_2S_2O_3$; when mol. proportions of the latter two substances were taken and the soln. was boiled, NH_3 was evolved and lustrous light-cream-colored scales of $[Pt(NH_3)_4][S_2O_3]$, a nonelectrolyte, deposited on cooling. If the aq. soln. of $[Pt(NH_3)_4]Cl_2$ and $Na_2S_2O_3$ is boiled until no more NH_3 is evolved, a water-sol. product is formed, which (1) after pptn. with EtOH as a yellow oil and slow evapn. over H_2SO_4 yields cryst. *trans*-$Na_2[Pt(NH_3)_2(S_2O_3)_2].6H_2O$ (I), or (2) yields flakes of *trans*-$K_2[Pt(NH_3)_2(S_2O_3)_2]$ (II) after addn. of satd. KOH and alc. II and thiourea form sparingly sol. $[Pt(NH_3)_2SCN_2H_4.S_2O_3]$. $[Pt(NH_3)_4]Cl_2$ and I in aq. soln. yield $[Pt(NH_3)_4][Pt(NH_3)_2(S_2O_3)_2]$. Prolonged heating of $[Pt(NH_3)_4]Cl_2$ with a large excess of $Na_2S_2O_3$ yields $Na_6[Pt(S_2O_3)_4]$. Admixture of solns. of $[Pt(C_5H_5N)_4]Cl_2$ (0.3 g.) and $Na_2S_2O_3.5H_2O$ (0.1278 g.) resulted in greenish yellow rhombohedral cryst. $[Pt(C_5H_5N)_4.S_2O_3]H_2O$, which loses H_2O when dried over H_2SO_4 *in vacuo* and which forms *trans*-$[Pt(C_5H_5N)_2.H_2O.S_2O_3]$ as a yellow powder if heated above 60°. When an aq. soln. of $[Pt(C_5H_5N)_4]Cl_2$ (0.3 g.) and $Na_2S_2O_3.5H_2O$ (0.2556 g.) was heated until pyridine was no longer evolved and alc.-ether mixt. added, water-sol. $Na_2[Pt(C_5H_5N)_2(S_2O_3)_2].3H_2O$ (III) was pptd. in plate form. III loses $3H_2O$ upon drying at 105°. $K_2[Pt(C_5H_5N)_2(S_2O_3)_2]$ or its NH_4 analog is formed by addn. of KCl or NH_4Cl to the soln. prior to pptn. of III with alc.; an aq. soln. of these salts reacts with $[Pt(NH_3)_4]Cl_2$ or with $[Pt(C_5H_5N)_4]Cl_2$ to give $[Pt(C_5H_5N)_2(S_2O_3)_2][Pt(NH_3)_4]$ or lustrous scales of $[Pt(C_5H_5N)_2(S_2O_3)_2][Pt(C_5H_5N)_4]$.

Nos. 4, 7.

Interaction of $[Pt(SCN_2H_4)_4]Cl_2$ and $Na_2S_2O_3$ solns. yields a yellowish flaky deposit, which after prolonged standing in the mother liquor forms yellowish prismatic cryst. $[Pt(SCN_2H_4)_4.S_2O_3]$; if twice the theoretical quantity of $Na_2S_2O_3$ is used, water-sol. *trans*-$Na_2[Pt(SCN_2H_4)_2.(S_2O_3)_2]$ (IV) is formed, which after pptn. with alc. and evapn. over H_2SO_4 yields cryst. IV.$6H_2O$. The K analog of IV may be formed by addn. of KOH to the IV soln. and pptn. with alc. IV or its K analog in aq. soln. forms $[Pt(NH_3)_4][Pt(SCN_2H_4)_2(S_2O_3)_2]$ and $[Pt(SCN_2H_4)_4][Pt(SCN_2H_4)_2.(S_2O_3)_2]$ with $[Pt(NH_3)_4]Cl_2$ or $[Pt(SCN_2H_4)_4]Cl_2$, resp.

G. A.

Inst. General and Inorg. Chem. Acad. Sci. Moscow. c 1940-.

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PROCESSES AND PROPERTIES INDEX

Reaction of thiosulfate with isomeric compounds of bivalent platinum. D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 28, 211-8(1940)(in English); cf. *C. A.* 35, 1338[4].—R. has studied the reactions of $Na_2S_2O_3$ with the cis and trans forms of $[Pt(NH_3)_2X_2]$, X = NO_2^-, Cl^-, Br^-. When hot solns. of 0.3 g. of *trans*-$[Pt(NH_3)_2Cl_2]$ and of 0.2480 g. of $Na_2S_2O_3$, resp., are mixed a white powdery ppt. of low soly. in water sepa. out. It is a nonelectrolyte of the formula *trans*-$[Pt(NH_3)_2(S_2O_3)H_2O]$. If double the amt. of thiosulfate is used no ppt. forms but *trans*-$Na_2[Pt(NH_3)_2(S_2O_3)_2]$ may be recovered from the soln. The ammonia mols. could not be replaced unless 4 times the theoretical amt. of $Na_2S_2O_3$ was used, when $Na_4[Pt(S_2O_3)_4]$ was the product. When 0.3 g. of *cis*-$[Pt(NH_3)_2Cl_2]$ and 0.2480 g. of $Na_2S_2O_3$, resp., are mixed, salts of the intermediate ion *cis*-$[Pt(NH_3)_2Cl(S_2O_3)]^-$ may be isolated either with Na, K, $[Pt(NH_3)_4]^{++}$ or $[Pt[Cs(NH_3)_3]_4]^{++}$ as the cation. If the soln. is allowed to stand for some time without removal of the product a yellowish powdery ppt. of the nonelectrolyte *cis*-$[Pt(NH_3)_2(S_2O_3)]$ results. If *cis*-$[Pt(NH_3)_2(NO_2)_2]$ is used the latter product forms immediately. If the amt. of $Na_2S_2O_3$ is doubled *cis*-$[Pt(NH_3)_2(S_2O_3)_2]^{--}$ results. This compd. can be isolated as $[Pt(NH_3)_4][Pt(NH_3)_2(S_2O_3)_2]$. The K salt was also isolated. With the cis starting material only twice the theoretical excess is necessary for the thiosulfate groups completely to displace the ammonia mols. The compds. $[Pt(NH_3)_2[CS(NH_3)_3]_2][Pt(NH_3)_2(S_2O_3)_2]$ in which both ions have the trans configuration and $[Pt[CS(NH_3)_3]_4][Pt(S_2O_3)_4]$ were prepd. J. P. McReynolds

Inst. Gen. & Inorganic Chem.; Inter., AS, c1940-

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

ca

b

Mixed platinum triammino-thiosulfates. D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 28, 236-9 (1940)(in English); cf. *C. A.* 35, 1338[4].—A series of compds. of the general formula $[PtA_3(S_2O_3)]$, where A may be ammonia, pyridine or thiourea, was prepd. by mixing solns. of *trans*-$[Pt(NH_3)_2[CS(NH_2)_2]_2]Cl_2$ and $Na_2S_2O_3$ in theoretical proportions, a white, slightly sol. *trans*-$[Pt(NH_3)_2CS(NH_2)_2(S_2O_3)]$ is pptd. If the amt. of $Na_2S_2O_3$ is doubled both mols. of thiourea are replaced. The product may be isolated as $[Pt(NH_3)_4][Pt(NH_3)_2(S_2O_3)_2]$. Similarly, from *trans*-$[Pt(C_5H_5N)_2[CS(NH_2)_2]_2]Cl_2$, *trans*-$[Pt(C_5H_5N)_2CS(NH_2)_2(S_2O_3)]$ is obtained. In this case trebling the $Na_2S_2O_3$ did not result in the removal of the second thiourea mol. Upon mixing of solns. contg. mol. proportions of *trans*-$[Pt(NH_3)_2(C_5H_5N)_2]Cl_2$ and $Na_2S_2O_3$ and subsequent evapn. to one-half vol., after several days yellow, sparingly sol. $[Pt(NH_3)_2C_5H_5N(S_2O_3)]$ was pptd. as small prisms. Upon addn. of double the amt. of $Na_2S_2O_3$ and heating or long standing both mols. of pyridine are displaced. $Ba_2[Pt(NH_3)_2(S_2O_3)_2]$ was isolated, as a light-cream-colored solid insol. in alc. By the action of H_2SO_4 upon this Ba salt the free acid $H_2[Pt(NH_3)_2(S_2O_3)_2]$ was obtained in soln. The acid is a strong acid, a 0.02 *M* soln. having a pH of 2.05, and can be titrated quantitatively with alkali. By mixing the calcd. amts. of *trans*-$[PtNH_3C_5H_5NCl_2]$ with $Na_2S_2O_3$ and thiourea a compd. of the formula $[PtNH_3(C_5H_5N)CS(NH_2)_2(S_2O_3)]$ was obtained as a white flaky deposit, which on standing changes to a white powder. The same dichloro compd. reacts with two parts of $Na_2S_2O_3$ to yield *trans*-$[PtNH_3C_5H_5N(S_2O_3)_2]^{--}$. This may be isolated either as the Ba salt or as the salt of $[Pt[CS(NH_2)_2]_4]^{++}$. From the Ba salt the free acid may be obtained. It exhibits properties very similar to those of the previous acid.

J. P. McReynolds

Inst. Gen. & Inorganic Chem. Mbr., AS, c 1940

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RIABCHIKOV, D.I.

"The Reactions with Thiosulphate as a Method for Determining the Nature of Isomerism of Platinum Complex Compounds," Dok. AN, 32, No. 5, 1941. Inst. Gen. and Inorganic Chem.; Acad. Sci. Moscow, c1941-.

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Mechanism of oxidation of thiosulphate compounds of platinum. D. I. Riabtschikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 233 – 236). – The oxidation of $K_2[Pt,2NH_3,(S_2O_3)_2]$ (I) and $K_2[Pt,S_2O_3Cl_2]$ (II) by $KBrO_3$ has been investigated, the compounds being chosen because the (S_2O_3) is linked in them in two distinct ways. The process was followed by electrometric titration. In the oxidation of $Na_2S_2O_3$ itself by $KBrO_3$ there are two stages: (1) $2Na_2S_2O_3 + O + 2HCl = Na_2S_4O_6 + H_2O + 2NaCl$; (2) $2Na_2S_4O_6 + 14O + 6H_2O = 2Na_2SO_4 + 6H_2SO_4$. When (I) is oxidised with $KBrO_3$, S separates at first, after which the Pt is oxidised. Finally the S is oxidised to H_2SO_4: $K_2[Pt,2NH_3,(S_2O_3)_2] + 9O + 6HCl + H_2O = [Pt,2NH_3,Cl_4] + 4H_2SO_4 + 2KCl$. (II) is oxidised as follows: $K_2[Pt,S_2O_3Cl_2] + 5O + 4HCl = K_2PtCl_6 + 2H_2SO_4$. A. I. M.

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3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

6

Valency of platinum in ethylene complex compounds. A. D. Hel'man and D. I. Ryabchikov. *Compt. rend. acad. sci. U. R. S. S.* 33, 462-5(1941). The results obtained by subjecting Cossa's salt, $NH_4[Pt(NH_3)Cl_3]$, (I) and Zeise's salts of the type $K[Pt(C_2H_4)Cl_3]$ (II) to electrometric oxidative titration with $KMnO_4$ in acid soln. establish the quadrivalency of Pt in the latter. I, in which Pt is bivalent, is oxidized normally and a jump in the potential is observed at the transition point. With II the initial potential of the soln. is 650–700 mv., which is characteristic of Pt (IV) compds., and no oxidation occurs.

J. C. Lo Cicero

No. 7

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3C

A-1

Reaction of thiosulphatoplatinites with amines. D. I. Riabtschikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 39, 229—231).—The reactions between $K_4[Pt(S_2O_3)_4]$ and C_5H_5N, NH_3, $(CH_3 \cdot NH_2)_2$, and $CS(NH_2)_2$ have been investigated. The *cis*-isomeride is formed with the amines, as with $K_2[PtCl_4]$, but with C_5H_5N there is a deviation with amines of the C_5H_5N type where the co-ordination bond is less firm. $CS(NH_2)_2$ is an exception and leads to the formation of a triamine in which the last S_2O_3'' could not be replaced. The following products with *cis*-configuration have been isolated: $Ba[Pt2NH_3(S_2O_3)_2]$; $[Pt2NH_3(S_2O_3)_2][Pt4CS(NH_2)_2]$; $K_2[Pt\,en_2(S_2O_3)_2]$; $[Pt\,en_2(S_2O_3)_2][Pt4NH_3]$. With $CS(NH_2)_2$ alone $[Pt3CS(NH_2)_2S_2O_3]$ is formed.

W. R. A.

A.S.M.E.A. METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

Products of the reaction of thiosulfatoplatinates with certain amines. D. I. Ryabchikov. *Doklady Akad. Nauk S. S. S. R.* 40, 258-61(1943); *Compt. rend. acad. sci. U. R. S. S.* 40, 229-31(1943)(in English). On heating $K_2[Pt(S_2O_3)_2]$ (I) with excess pyridine (II) on the water bath, removing excess II and pptg. with alc., $K_2[Pt(S_2O_3)_2]$ (III) was obtained. It is surmised that reaction of I and II formed unstable *cis*-$K_2[Ptpy_2(S_2O_3)_2]$, which lost 2 mols. of II to yield III. Reaction of I with a satd. NH_3 soln. yielded *cis*-$K_2[Pt(NH_3)_2(S_2O_3)_2]$ (IV), which is more stable than I by virtue of having NH_3 and S_2O_3 groups in *trans*-position to each other and which with $BaCl_2$ yielded $Ba[Pt(NH_3)_2(S_2O_3)_2]$, pptg. on addn. of alc. With $[Pt(SC(NH_2)_2)_4]Cl_2$, IV formed sparingly sol. $[Pt(NH_3)_2(S_2O_3)_2][Pt(SC(NH_2)_2)_4]$. With $NH_2(CH_2)_2NH_2$, III formed *cis*-$K_2[(S_2O_3)_2Pt\ en]$, which with $[Pt(NH_3)_4]Cl_2$ yielded $[Pt(NH_3)_4][Pt(S_2O_3)_2\ en]$. Introduction of NH_3, II and $NH_2(CH_2)_2NH_2$ into the complex strengthened the bonding of the 2 remaining S_2O_3 groups. This was not the case with $SC(NH_2)_2$, which with I forms virtually insol. $[Pt(SC(NH_2)_2)_2S_2O_3]$. It is suggested that either *cis*- or *trans*-$K_2[Pt(SC(NH_2)_2)_2(S_2O_3)_2]$ may be involved as a rapidly reacting intermediate product.

I. W. Perry

Inst. Gen. and Inorg. Chem., A S.C 1943-

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Thiosulphate compounds of palladium. D. I. Riabtschikov and A. P. Izakova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 161—164).—When acted on by S_2O_3'' Pd salts react in an analogous manner to those of Pt. Equimol. quantities of $K_2[PdCl_4]$ (I) and $Na_2S_2O_3$ react to form a black ppt. of $PdS_2O_3 + PdS$. Pptn. of Pd is quant. With <2 mols. of $Na_2S_2O_3$, yellow $K_2[Pd(S_2O_3)_2]$, sol. in an excess of $Na_2S_2O_3$, is pptd. $[PdCl_4][Pd4NH_3]$ dissolves readily in aq. $Na_2S_2O_3$ at the ordinary temp. to yield an orange-coloured solution from which EtOH ppts. bright yellow $[Pd(S_2O_3)_4][Pd4NH_3]_2$. Aq. *trans*-$[Pd2NH_3Cl_2]$ and aq. $Na_2S_2O_3$ form sparingly-sol., pale yellow $[Pd2NH_3.S_2O_3.H_2O]$. With aq. $Na_2S_2O_3$ and aq. $[Pd4NH_3]Cl_2$ the reactions $[Pd4NH_3]Cl_2 + Na_2S_2O_3 \rightarrow [Pd4NH_3]S_2O_3 + 2NaCl$, or $[Pd3NH_3.S_2O_3] + 2NaCl + NH_3$, or $[Pd2NH_3.S_2O_3.H_2O] + 2NaCl + 2NH_3$, can take place. With 2 mols. of $Na_2S_2O_3$, the reaction $[Pd4NH_3]Cl_2 + 2Na_2S_2O_3 \rightarrow Na_2[Pd2NH_3(S_2O_3)_2] + 2NaCl + 2NH_3$ occurs. The $CS(NH_2)_2$ derivative $[Pd4CS(NH_2)_2]Cl_2$ and $Na_2S_2O_3$ in conc. solution yield an orange-red ppt. of $[Pd2CS(NH_2)_2.S_2O_3.H_2O]$ with $CS(NH_2)_2$ in the *trans*-position. With an excess of $Na_2S_2O_3$, the sol. product is $Na_2[Pd2CS(NH_2)_2.2S_2O_3]$, which crystallises with 6 H_2O on treatment with EtOH and evaporation over H_2SO_4 in an atm. of CO_2. The $(CH_3{\cdot}NH_2)_2$ (en) compound $[Pd2\,en]Cl_2$, prepared by heating (I) with an excess of $(CH_3{\cdot}NH_2)_2$, reacts with $Na_2S_2O_3$ to give $[Pd\,en\,S_2O_3]$ and $Na_2[Pd\,en(S_2O_3)_2]$. Excess of $Na_2S_2O_3$ displaces en completely from the inner sphere, S_2O_3 residues being substituted.

I. S. T.

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1ST AND 2ND ORDERS

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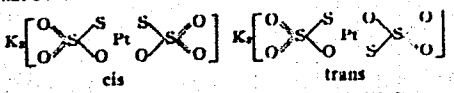
3RD AND 4TH ORDERS

The structure of dithiosulfato platinates. D. I. Ryabchikov. *Doklady Akad. Nauk S. S. S. R.* 41, 220-1 (1943); *Compt. rend. acad. sci. U. R. S. S.* 41, 208-9 (1943)(in English).—Differences in soly. of 2 compds. of formula $K_2[Pt(S_2O_3)_2]$ (cf. *C. A.* 34, 7773[9]) suggest that cis-trans isomerism is involved. A warm aq. soln. of the more easily sol. compd. (I) reacted with $NH_2(CH_2)_2NH_2$ (II) to form $enH_2[Pt(S_2O_3)_2en]$ (III), while reaction of the less-sol. compd. (IV) with II yielded a difficultly sol., bright-yellow, cryst. ppt. of $[PtS_2O_3en]$ (V). It is thought that each of the 2 S_2O_3 groups in III occupies one coördinate position, being linked to the central Pt atom through one S atom only. In V the sole S_2O_3 group occupies 2 coördinate positions, being linked to the Pt atom through both a S and an O atom. It is concluded that I is the *cis* and IV the *trans* isomer of $K_2[Pt(S_2O_3)_2]$



cis trans

J. W. Perry

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RIABCHIKOV, D.I.

"On the Interaction of Thi sulphate with Certain Salts of Platinum," Dok. AN, 42, No. 4, 1943. Inst.of General and Inorganic Chem. Mbr., Acad. of Sci. c1943-.

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1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Colorimetric Determination of Rhodium in Presence of Platinum. D. I. Riabtschikov (*Zhur. Prikład. Khim.*, 1944, 17, 284–286; *Brit. Abs.*, 1945, [C], 231).—[In Russian]. A differential colorimetric method for the determination of Rh in Pt–Rh alloys is described. The sample is dissolved in *aqua regia*, HNO_3 is removed, and the solution treated with $KHSO_3$. The yellow colour due to the formation of $Pt(SO_3)_4''''$ from $PtCl_6''$ is estimated colorimetrically by comparison with a standard solution.

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PROCESSES AND PROPERTIES INDEX

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Determination of Os in osmic acid by potentiometric titration. D. I. Ryabchikov. *J. Applied Chem.* (U.S.S.R.) 17, 328-8(1944). - Potentiometric titration is more precise than is visual detection of the end point in the detn. of OsO_4, both in the method of Klobbie (*Chem. Zentr.* 1898, II, 65), which depends on the reaction $OsO_4 + 4KI + 2H_2SO_4 = OsO_2 + 4I + 2K_2SO_4 + 2H_2O$ and titration of the liberated I with $Na_2S_2O_3$, and in the method of direct titration with $Na_2S_2O_3$ in alk. soln., in which the reaction is $4OsO_3(OH)_2^{--} + S_2O_3^{--} + 2OH^- = 4OsO_4^{--} + 2SO_4^{--} + 5H_2O$. O. M. Kosolapoff

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BC

A-1

Interaction of thiosulphate with certain platinum salts. D. I. Riabtschikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1944, **42**, 178—180). —Co-ordination compounds of Pt^{IV} containing S_2O_3'' in the inner sphere cannot be formed owing to the very ready reduction of Pt^{IV} to Pt^{II}. Attempts to base an analytical procedure for Pt on this failed, because of variations in the extent to which S_2O_3'' enters the co-ordination sphere of Pt^{IV}. Large excess of S_2O_3'' is necessary in order to displace NH_3 from cationic complexes in Pt^{IV} co-ordination polymers, but C_5H_5N and other more loosely-held groups are quite easily replaced. R. C. M.

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PROCESSES AND PROPERTIES INDEX

Interaction of thiosulfate with certain salts of Pt. D. I. Ryabchikov.—*Doklady Akad. Nauk S. S. S. R.* 42, 178-80 (1944); *Compt. rend. acad. sci. U. R. S. S.* 42, 178-80 (1944) (in English).—Pt (IV) compds. are reduced by $Na_2S_2O_3$ to Pt (II). Thus $Na_2[PtCl_6]$ and $[Pt(NH_3)_4Cl_2]Cl_2$ yield, resp., $Na_2[PtCl_4]$ (II) and $[Pt(NH_3)_4][PtCl_4]$ (III). The presence of II and III is confirmed by pptn. in the form of green Magnus salt, $[PtCl_4][Pt(NH_3)_4]$ (IV). Attempts to utilize the reaction of $Na_2S_2O_3$ with Pt salts for detn. of Pt fail, owing to formation of a variable mixt. of complexes of different thiosulfate content, viz., $Na_4[Pt(S_2O_3)_2]$, $Na_6[Pt(S_2O_3)_3]$ and $Na_8[Pt(S_2O_3)_4]$ (V). The action of $Na_2S_2O_3$ on various Pt complexes indicates an essential difference in bond strength between various ligands and the central Pt atom. Thus, both IV and $[Pt(C_2O_4)_2][Pt(NH_3)_4]$ react readily with a hot aq. $Na_2S_2O_3$ to form readily sol. V and very slightly sol. $[Pt(S_2O_3)_2][Pt(NH_3)_4]_2$ (VI). Prolonged heating with excess $Na_2S_2O_3$ is required to convert VI into V. However, $[PtCl_4][Ptpy_4]$ and $[PtCl_4][Pt\ 4SC(NH_2)_2]$ (VIII) react readily with excess $Na_2S_2O_3$ with formation of V as the only Pt-contg. compd. Furthermore, VII reacts with a deficient amt. of $Na_2S_2O_3$ to form $[Pt(S_2O_3)_2][Pt4SC(NH_2)_2]$ in which each thiosulfato group occupies two coördinate positions.

J. W. Perry

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Determination of noble metals by potentiometric titration. D. I. Ryabchikov. *Zhur. Anal. Khim.* 1, 47-56 (1946); cf. *C.A.* 41, 5813. Pt, Ir, Au, Os, and Pd were detd. potentiometrically. The app. used in these detns. is described in *C.A.* 34, 7777[9]. Pt^{++} was oxidized with $Ce(SO_4)_2$. The equiv. point was indicated by a jump in potential. Quadrivalent Pt was first reduced to bivalent with Cu_2Cl_2. To det. Pt in a compd. in which it is in the quadrivalent state, place the soln. of the sample in the reaction vessel and make ready for titrating. Start the stirrer and take the reading of the potentiometer. Add slowly the Cu_2Cl_2 soln. and watch the drop in potential until a slight excess is indicated by a potential below 400 mv. and continue to titrate with $Ce(SO_4)_2$. There are 2 jumps in potential: the first for $Cu^{+} \rightarrow Cu^{++}$ and the second for $Pt^{++} \rightarrow Pt^{++++}$. The difference between the two is the amt. of $Ce(SO_4)_2$ used to reduce the Pt. Ir was titrated with hydroquinone by the equation: $2(NH_4)_3[IrCl_6] + C_6H_4(OH)_2 + 2H_2O \rightarrow 2(NH_4)_3[IrCl_5H_2O] + C_6H_4O_2 + 2HCl$. The Ir salt was dissolved in 150 ml. of H_2O and then titrated, the equiv. point was indicated by a sudden drop in potential. Au was titrated with $C_6H_4(OH)_2$: $2Na[AuCl_4] + 3C_6H_4(OH)_2 \rightarrow 2Au + 3C_6H_4O_2 + 2NaCl + 6HCl$. To the soln. in aqua regia add a slight excess of NaCl to prevent the reduction of Au^{3+} to the univalent state and pptn. metallic Au in subsequent operations. Carry out the titration in a stream of CO_2. At first, the potential practically does not change; only after ⅔ of the reducing agent is added can a change be observed. The equiv. point was marked by a sharp drop. Au was also titrated with a $(NH_4)_2[Fe(SO_4)_2]$ soln. The progress of the titration was similar to that with $C_6H_4(OH)_2$. Os was detd. by titrating with KI and titrating free I with $Na_2S_2O_3$ or by direct titration with $Na_2S_2O_3$. Direct titration of Os with $Na_2S_2O_3$ was carried out in an alk. soln. according to the equation: $4Na_2[OsO_4(OH)_2] + 2NaOH + Na_2S_2O_3 \rightarrow 4Na_2[OsO_4] + 2Na_2SO_4 + 5H_2O$. In this titration, the drop in potential at the equiv. point is not large but is quite distinct. In the KI titration, Os is reduced from the octavalent to a quadrivalent state; with $Na_2S_2O_3$ octavalent Os is reduced to a sexivalent state. Pd was titrated with $Na_2S_2O_3$ in a neutral soln. at 80° by the reaction: $K_2[PdCl_4] + Na_2S_2O_3 + H_2O \rightarrow PdS + 2KCl + 2NaCl + H_2SO_4$. The equiv. point was shown by a distinct drop in potential when all of the Pd is pptd. as black PdS.

M. Hosch

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Dokl. AN SSSR

Complex compounds of rare earth metals and some organic amines. D. I. Ryabchikov and E. A. Terenfeva. *Compt. rend. acad. sci. U.S.S.R.* 51, 291-4(1946). Ce, La, Pr, Nd, Y, and Er form complex compds. with org. amines, having a coördination number of six. With phenyldimethylpyrazolone (antipyrene) the product is $[M(C_{11}H_{12}ON_2)_6]X_3$, where X is the acid radical and M is the metal. The *N*-dimethylantipyrene (pyramidone) mol. has two N atoms connected to Me groups and can take up two of the coördination places in the metal atom, forming, for instance, $[Ce(C_{13}H_{17}ONO_3)_3](NO_3)_3$. Attempts to make analogous compounds with pyridine, of the formula $M^{III}(6RN)X_3$, were not successful. A. S. Eastman

W. I. Vernadsky Lab. Geochemical Problems, 1945-

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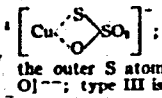
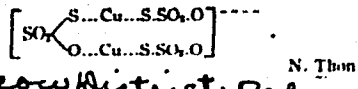
Composition and structure of copper thiosulfate compounds. D. I. Ryabchikov and V. G. Sil'nichenko (Moscow Regional Ped. Inst.). *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1947, 19-25(in Russian).—(1) From a mixt. of 1 mole $CuSO_4$ and 3 moles $Na_2S_2O_3$ at room temp., alc. seps. an oily liquid which, on standing, crystallizes into $Na_3[Cu(S_2O_3)_2]\,6H_2O$ (I), colorless, sol. in H_2O. This compd. is always obtained when $Na_2S_2O_3$ is in excess over $CuSO_4$; however, an excess beyond the molar ratio 3:1 results in contamination of the product with $Na_2S_2O_3$. The reaction proceeds according to $2CuSO_4 + 6Na_2S_2O_3 = 2Na_3[Cu(S_2O_3)_2] + Na_2S_4O_6 + 2Na_2SO_4$. The $S_2O_3^{--}$ ions form no complexes either with Cu^+ or with stronger complex-forming metals such as Pt. Hot solns. give a ppt. of CuS. If the mixt. is left at room temp. several days, it becomes gradually turbid and ppts. a nearly black I. (2) From a soln. of I, a soln. of $Cu(NH_3)_4SO_4$ ppts. $Na[Cu(NH_3)_4][Cu(S_2O_3)_2]$, blue elongated prisms, decompd. on heating. The 3rd Na atom cannot be replaced by $[Cu(NH_3)_4]$. (3) On gradual addn. of satd. $CuSO_4$ to satd. $Na_2S_2O_3$, the soln. becomes first colorless, then yellow, finally almost green; it then ppts. egg-yolk-yellow crystals of the compn. $CuNa_3[Cu(S_2O_3)_2]$, which is obviously the product of a reaction between I and excess Cu^+ ions. This compd. is unstable in air, the outer Cu^+ undergoing oxidation to Cu^{++}. It dissolves in $Na_2S_2O_3$ according to $CuNa_3[Cu(S_2O_3)_2] + 2Na_2S_2O_3 = 2Na_3[Cu(S_2O_3)_2]$. (3) The salt $CuNa[Cu(S_2O_3)_2]$, with Cu^{++} outside the complex, obtained by pptn. of I with $CuSO_4$, is stable. (4) At a molar ratio $CuSO_4:Na_2S_2O_3 = 1:2$, the reaction proceeds according to $2CuSO_4 + 3Na_2S_2O_3 = Cu_2S_2O_3 + Na_2S_4O_6 + 2Na_2SO_4$ and $Cu_2S_2O_3 + Na_2S_2O_3 = 2Na[Cu(S_2O_3)]$, resulting in a greenish soln., from which satd. KCl rea'ily ppts. $K[Cu(S_2O_3)]$ (II), nearly white. (5) With Cu^{++} : $Na_2S_2O_3 = 1:3$, satd. KCl alone fails to form a ppt., but alc. seps. an oily liquid, which crystallizes into white $K_3[Cu(S_2O_3)_2].3H_2O$; this can also be obtained by mixing satd. solns. of I and KCl. (6) From a mixt. of 5 g. $CuSO_4.5H_2O$ and 12.38 g. $Na_2S_2O_3.5H_2O$, satd. KCl ppts. yellow crystals of $K_3[Cu_2(S_2O_3)_3]$ (III), stable in air. (7) Depending solely on the ratio of Cu and $Na_2S_2O_3$, only 3 types, I, II, and III, of complex compds. are formed; the widely varying compds. previously described in the literature are erroneous. The coordination no. in complexes of Cu^+ with $S_2O_3^{--}$ is always 2. In type II, the S_2O_3 group is bound to the Cu by both the outer S and the O atom, thus forming a closed ring



; in type I, the bond is formed only by the outer S atoms, resulting in $[O.SO_3.S...Cu...S.SO_3.O]^{----}$; type III is intermediate (or mixed),



N. Thon

Izv. Akad. Nauk SSSR, Ser. Khim.

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Moscow District Pedagogical Inst., The Chair of Chemistry

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Methods of Separation of the Rare-Earth Elements. (In Russian.) D. I. Riabchikov and E. A. Teren'teva. *Progress in Chemistry* (U.S.S.R.), v. 16, July-Aug. 1947, p. 461-489.

A review. 118 ref.

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CA

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Coördination strength of some substituents with platinum. D. I. Ryabchikov. *Izvest. Sektora Platiny i Drug. Blagorod. Metall., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* (Ann. secteur platine, Inst. chim gén.) No. 20, 42-52(1947).—To det. the intensity with which various anions displace OH^- from the compd. $[Pt(NH_3)_4(OH)_2]$, equimol. vols. of aq. solns. of the salts were combined and the pH of the resulting soln. was detd. This was the initial pH. The solns. were kept in a thermostat and pH readings were taken periodically until 2 successive readings gave the same value. This was the final or equil. pH. From the results were calcd. the equil. consts. (K). Values of K decrease in the order: $S_2O_3^{--} > I^- > SCN_2H_4 > SCN^- > NO_2^- > Br^- > C_5H_5N > Cl^- > OH^- > SO_4^{--}, NO_3^-, ClO_4^-$. The last 3 anions did not react. The unexpected activity of $S_2O_3^{--}$ is attributed to its link with Pt through S.

M. Hosch

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CA

Electrometric titration in determining the structure of the inner sphere of complexes. D. I. Ryabchikov. *Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* (Ann. secteur platine, Inst. chim. gén.) No. 20, 130-48(1947). The application of electrometric titration to elucidate structural characteristics is illustrated by exptl. results. The cis and trans forms of $[Pt(NH_3)_2(OH)_2]$ were titrated potentiometrically. The curve for the trans form had 2 distinct bends at 5.25 and 9.25 cc. of 0.1 N HCl. The curve for the cis form had only one bend: at 9.25 cc. Thus, while the cis compd. acted as a monobasic compd., in the trans form the 2 OH radicals were quite distinct. $[PtBr_2][Pt(NH_3)_4]$, $[Pt(CN)_4][Pt(NH_3)_4]$, $[Pt(NH_3)_2Br_2]$, and $[Pt(NH_3)_2(CN)_2]$ were titrated with $KBrO_3$ and $KMnO_4$. The titration curves of the first 2 compds. had 2 distinct breaks while the curves of the other 2 compds. had only one break; this indicates the binuclear structure of the former and the mononuclear structure of the latter. By studying the oxidation of a number of complex Pt oxalates and binoxalates it was observed that the oxidation proceeds in steps. The bivalent Pt was oxidized first then the oxalate, and finally the binoxalate. When the mol. contained 2 oxalate or binoxalate groups, each oxidized separately and distinctly. The max. number of steps was observed in binuclear compds., in which case the oxidation of the Pt in the anion was distinct from that of Pt in the cation. The distinct oxidation of 2 oxalate or binoxalate groups is attributed primarily to the influence of the trans position. In oxidizing Pt thiosulfate complexes with $KBrO_3$, 3 steps were observed: bivalent S is oxidized to elemental S, then bivalent Pt is oxidized to quadrivalent, and finally elemental S is oxidized to sulfate. By potentiometric titration of Pt compds. with unsatd. org. mols., it was shown that Pt is quadrivalent. Titration of $[Pt(NH_3)_2(NH_2SO_3)Cl]$ required 3 times as much $KMnO_4$ as $KBrO_3$. In both cases the curves were smooth up to the equiv. break. Since $KMnO_4$ does not oxidize NH_2HSO_4, the triple consumption of $KMnO_4$ is attributed to reduction of Pt by NH_2SO_3H as soon as it is oxidized by $KMnO_4$. M. Hosch

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1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

Dokl. AN SSSR 6

Rare earth thiosulfates. D. I. Ryabchikov and V. Ya. Volkova. *Compt. rend. acad. sci. U.R.S.S.* 55, 501-503(1947)(in French).—Sol. rare earth salts react with $Na_2S_2O_3$ soln. by metathesis to yield rare earth thiosulfates. Addn. of 3 vols. MeOH to 1 vol. of the soln. yields a quant. recovery of the anhyd. salt as a white or characteristically colored powder, slightly sol. in water but easily sol. in acids with the evolution of S and formation of the sulfite. Free S corresponding to $^1/_2$ the total S in the compds. is formed on long standing in the mother liquor after alc. pptn. On heating to 800-1000°, $Th(S_2O_3)_2$ and $Ce_2(S_2O_3)_3$ yield, resp., ThO_2 and CeO_2, almost completely insol. in HCl, while La, Nd, and Pr thiosulfates give compds. of the general formula $M_2S_2O_7$, sol. in warm 1:4 HCl. By use of this soly. difference after calcination, $Ce_2(S_2O_3)_3$ was sepd. from mixts. of La and Pr thiosulfates and La and Nd thiosulfates. Addn. of $Na_2S_2O_3$ to $Ce(SO_4)_2$ in neutral or nearly neutral soln. yields a $Ce_2(SO_4)_3$ and $Na_2S_2O_3$. The reaction is quant., showing a color change and a marked change in potential at the equivalence point. Paul F. Cundy

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RYABCHIKOV, D. I.

PROCESSES AND PROPERTIES

N 8

707. Thiosulfate Compounds of Some Rare Earths, by D. I. Ryabchikov and V. Ya. Volkova. Doklady Akademii Nauk SSSR 55, p. 505-508, 1947. No. 6

Lab. Geochem. Problems im. V. I. Vernadskiy. AS, USSR, -1947-4

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USSR/Metals
Cerium
Rare Earths

Dec 1947

"Complex Citric Acid Compounds of Rare Earth Elements of the Cerium Group," D. I. Ryabchikov, Ye. A. Terentyeva, Inst Geochem and Analytic Chem imeni V. I. Vernadskiy, Acad Sci USSR, 3¼ pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVIII, No 7

PA 60T74

Describes tests and studies leading authors to conclude that due to relationship between potassium citrate and rare earth element salts of cerium group, there is a primary reaction which produces a compound which will dissolve with difficulty. Reaction forms

60T74

USSR/Metals (Contd)

Dec 1947

a simple salt of this group of metals with a citric acid residue. Submitted by Academician I. I. Chernyayev, 15 May 1947.

RYABCHIKOV, D. I.

60T74

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

7

Colorimetric determination of cerium. D. I. Ryabchikov and Z. G. Strelkova. *Zhur. Anal. Khim.* 3, 229-31 (1948).—Ce^{3+} in the presence of excess citrate and sufficient NaOH to make the pH = 8-9 gives with H_2O_2 a reddish brown soln. which is thought to contain $[Ce(C_6H_5O_7)]^{3-}$. For the colorimetric detn. of Ce in a mineral, treat the sample with hot concd. H_2SO_4 and evap. until all acid fumes are expelled. Dissolve the residual sulfates in cold water, filter, and ppt. the oxalates of the rare earths in the usual manner. Dissolve the ppt. in a little satd. K citrate soln., dil. to a definite vol., and mix. Take 1-ml. portions of the soln. in a series of test tubes and add 1 drop, 2 drops, etc., of 0.1 *N* NaOH and then some 10% H_2O_2 to see how the max. color is best obtained. Finally compare the max. color with that of standards similarly treated. M. Hosch

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RYABCHIKOV, D.I.

USSR/Chemistry - Analysis, Colorimetric
Chemistry - Cerium

Jul/Aug 48

"Determination of Cerium by Colorimetrical Means," D.I. Ryabchikov, Z.G. Strelkova; Inst. Geochemistry and Anal. Chemistry im. V.I. Vernadskiy, Dept. Chem. Sci. Acad. Sci., -1947-.

Zhur. Analit. Khim., No. 4, 1948.

Cerium can be rapidly and accurately determined by colorimetric method. Stable colored solutions of tetravalent cerium can be obtained when metallic ion is in form of citric acid complex compound. Transformation of all the Ce3 into colored form Ce4 is best achieved by action of hydrogen peroxide in an alkaline medium. Cerium being determined must first be isolated from heavy metals. Other elements of group do not affect accuracy of method. Submitted 6 Jan 47.

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Analysis - 11

Determination of Platinum and Rhodium in Their Alloys. D. I. Ryabchikov (*Izvest. Sekt. Platiny*, 1948, (22), 28-34; *C. Abs.*, 1950, 44, 10586).—[In Russian]. The detn. of Rh is based on the reduction of Pt^{4+} to the Pt^{2+} state and on destroying the yellow colour of $PtCl_6^{2-}$ with HSO_3^-. The characteristic rose colour of $RhCl_3^3$ remains unaffected, and is used for the colorimetric detn. of Rh. The reaction proceeds in 2 stages: $M_2[PtCl_6] + KHSO_3 + H_2O = M_2[PtCl_4] + KHSO_4 + 2HCl$ and $M_2[PtCl_4] + 4KHSO_3 = M_2[Pt(SO_3)_4] + 4HCl$. In the presence of HCl the colour of Rh is more stable. To determine Rh dissolve 1 g. of alloy in *aqua regia* and heat to remove N oxides. Evaporate almost to dryness, transfer to a 100-ml. volumetric flask, and acidify with HCl. Prepare a standard by dissolving 0·2513 g. of very pure $(NH_4)_3[RhCl_6]$ in a 100-ml. volumetric flask and acidify with HCl. Prepare a saturated $KHSO_3$ soln. The standard and $KHSO_3$ soln. should be prepared daily. Into the left cylinder of a Duboscq colorimeter put 10 ml. of standard, 3 ml. of saturated $KHSO_3$, 2 ml. of conc. HCl, and mix thoroughly. Into the right cylinder put 10 ml. of soln. to be analysed, 3 ml. of $KHSO_3$ soln., 2 ml. of HCl, mix, and read the colour after 2–3 min. The order in which the reactants are added must be as given. Take readings on several aliquots and determine the average value. Pt is determined by either reduction or oxidation potentiometric titration. The reduction titration is: $PtCl_6^{--} + 2CuCl = PtCl_4^{--} + 2CuCl_2$. This reaction must be carried out in an atmosphere of CO_2. To make sure that all the Pt is quadrivalent, add a few drops of freshly prepared Cl water. The titration is carried out to the 2nd break. The 1st break is due to the reduction of excess Cl_2, but the 2nd is caused by the reduction of all of the Pt. In the oxidizing titration the Pt in soln. is reduced with Cu_2Cl_2 and then titrated with $KMnO_4$. In this titration also there are 2 breaks, the 1st being due to oxidation of excess Cu_2Cl_2. Throughout this procedure of $KMnO_4$ titration it is advisable to use as little HCl as possible and to use the Reinhardt reagent.

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ma.

analysis

*Use of Potentiometric Titration in the Determination of Iridium and Osmium. D. I. Ryabchikov (*Izvest. Sekt. Platiny*, 1948, (22), 35-42; *C. Abs.*, 1950, **44**, 10583).—[In Russian]. Detn. of Ir is based on the reaction $2(NH_4)_3(IrCl_6) + C_6H_4(OH)_2 + 2H_2O \rightarrow 2(NH_4)_3(IrCl_5.H_2O) + C_6H_4O_2 + 2HCl$ (R. and Kuyazheva, *Compt. rend. (Doklady) Acad. Sci. U.R.S.S.*, 1939, [N.S.], **25**, 601; *M.A.*, **8**, 275). The titre of the hydroquinone is established, preferably against a known weight of Ir. The equivalent point is indicated by a jump in potential. Rh, Pt, and air do not interfere. Care must be taken to have all the Ir in the quadrivalent state. Cl water can be used for this purpose. Excess of oxidizer should be removed. Os is titrated potentiometrically according to a modified Klobbie method based on: $OsO_4 + 4KI + 4H_2SO_4 \rightarrow OsO_2 + 2I + 4KHSO_4 + 2H_2O$, followed by titrating the liberated I with $Na_2S_2O_3$.

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Determination of gold and platinoids in bullion gold. D. I. Ryabchikov and G. B. Kuvazheva. *Izvest. Sektora Platiny i Drugikh Blagorod. Metal. Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* No. 22, 121-8(1948).—Dissolve the sample in aqua regia and add twice the theoretical quantity of NaCl to the soln. The Au forms $Na[AuCl_4]$ in which form the trivalent state is stable and suitable for titration. The titration is carried out potentiometrically with hydroquinone or $(NH_4)_2Fe(SO_4)_2$ soln. The end point is marked by a jump in potential. To det. platinoids in the sample, dissolve 5 g. of metal in aqua regia, and boil off N oxides, NOCl, and excess HCl. Filter to remove AgCl and an insol. residue and to the soln. add twice the theoretical quantity of NaCl. The soln. now contains Au, Pt, Ir, and Pd. Transfer to a 250-ml. flask and dil. to vol. To a 25-ml. aliquot add 20 ml. of a satd. NH_4 oxalate soln., and boil 15-20 min. Au is reduced to metal, filter and weigh. Evap. the combined filtrate and wash water to half its vol. and add 20-30 ml. of 25% H_2SO_4. Heat to boiling and add 0.3 *N* $KMnO_4$ slowly until a stable color appears. This destroys the oxalate and oxidizes Pt, Ir, and Pd to their highest valency. In this soln. Pt is detd. potentiometrically as outlined in *C.A.* 44, 10386*h*. If the soln. is a colored brown, add to the titrated soln. a little Mohr's salt soln. If the color fades it indicates the absence of Pd and the presence of Ir. If the color remains, it indicates the presence of Pd. In either case, titrate the reduced soln. with 0.1 *N* $KMnO_4$. The 1st jump in potential is due to $Fe^{++} \rightarrow Fe^{+++}$ and the 2nd to $Ir^{+++} \rightarrow Ir^{++++}$ if present. In the latter case Pt and Ir are calcd. accordingly. To the titrated soln. add 20-30 ml. of a satd. aq. soln. of dimethylglyoxime, allow to stand over night, filter, and weigh the dried Pd ppt.

M. Hosch

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RYABCHIKOV, D.I.

Jan/Feb 49

USSR/Chemistry - Rare Earth Metals
Chemistry - Organic Compounds

"Complex Formations of Rare Earth Metals," D.I. Ryabchikov, Ye. A. Terent'yeva, Inst. Geochem and Anal. Chem, Acad. Sci. USS , 12 pp.

Iz Ak Nauk SSSR, Otdel Khim Nauk, No. 1

Establishes that rare earth elements form quite stable, complex compounds with series of substitutes. Obtains such compounds with a number of organic amines and salts of organic acids. Finds that, in a number of rare earth elements, their ability to form complex compounds increases sharply with decrease in their ionic radius. Submitted 20 Feb 48.

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RYABCHIKOV, D.I.

Jul/Aug 49

USSR/Chemistry - Thiosulfates
Chemistry - Silver

"Complex Compounds of Silver with Thiosulfate," D.I. Ryabchikov, V.G. Sil'nichenko. Mbr., Inst. Geochemistry and ANalytical Chemistry im. V.I. Vernadskiy, Dept. Chem. Sci., Acad. Sci., -1943-.

Iz AK Nauk SSSR, Otdel Khim.Nauk, No. 4, 1949.

Reviews provlem of composition and structure of thiosulfate-silver compounds in light of complex-forming property of the thiosulfate residue. Submitted 12 Jul 48.

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RYABCHIKOV, D. I.

Chem (2)

Application of an ion-exchange chromatographic method in analytical chemistry. D. I. Ryabchikov. *Issledovaniya v Oblasti Khromatog., Trudy Vsesoyuz. Soveshchaniya Kromatog., Akad. Nauk S.S.R., Otdel. Khim. Nauk* 1950, 172-83(Pub. 1952).—A review with 26 references. G. M. K.

Chemical Abs./
Vol. 48 No. 5
Mar. 10, 1954
Analytical Chemistry

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Cd

Determination of boron and fluorine when present together. D. I. Ryabchikov and A. V. Dantova (Acad. Sci., U.S.S.R.). *Zavodskaya Lab.* 5, 28-31(1950).—B is distd. off as BF_3 from a H_2SO_4 soln. The B in the distillate is sepd. from F by absorbing it on a synthetic resin cationite. It is displaced from the latter by HCl and B is detd. colorimetrically with the aid of carmine (*C.A.* 43, 9944e). The distillate from which B was removed is used for detg. F. This distillate is passed through an anionite from which the F is subsequently displaced with Na_2CO_3. The F is distd. off and detd. colorimetrically.

M. Hoseh

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"APPROVED FOR RELEASE: 06/20/2000 CIA-RDP86-00513R001446220013-8

The complex sulfite compounds of platinum. D. I. Ryabchikov and N. B. Lyubimova (Moscow Regional Pedagog. Inst.). Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R. 25, 170-91(1950).—See C.A. 45, 6118c. J. Rovtar Leach

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CA

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Sulfitoplatinites. D. I. Ryabchikov and N. B. Lyubimova. *Doklady Akad. Nauk S.S.S.R.* 70, 693-6(1951); cf. *C.A.* 39, 2941[4].—Reaction of 4 Na_2SO_3 with K_2PtCl_4 yields $Na_4[Pt(SO_3)_4].2H_2O$. This poorly sol. substance dissolves on addn. of strong acids, and reacts with $Pt(NH_3)_4Cl_2$ to give colorless, poorly sol. $[Pt(NH_3)_4][Pt(SO_3)_4]$. $[Pt\ tu_4][Pt(SO_3)_4]$ (tu = thiourea) is a poorly sol., yellow solid. K_2PtCl_4 reacts with 4 $NaHSO_3$ on heating to give a colorless soln., apparently of $Na_2H_4[Pt(SO_3)_4]$, which yields the above tetrammine and tetrathiourea derivs.; an excess of thiourea yields colorless $[Pt\ tu_4SO_3]$. Neutralization of the soln. of K_2PtCl_4 and $NaHSO_3$ with NaOH yields $Na_4[Pt(SO_3)_4].2H_2O$. Use of $K_2S_2O_3$ instead of $NaHSO_3$ gives $K_6[Pt(SO_3)_4]$. Passage of SO_2 into aq. soln. of K_2PtCl_4 gave a colorless soln. of $K_2H_4[Pt(SO_3)_4]$, which on neutralization with NaOH gave the poorly sol. Na salt, while evapn. of the soln. gave loss of 2 SO_3^{--} and yielded yellow $K_2[Pt(SO_3)_2].2H_2O$; action of strong acids on the Na_4 salt, gives $Na_2[Pt(SO_3)_2].2H_2O$, lemon-yellow solid. Since the disulfite complexes may be expected to form cis and trans isomers, a study of ethylenediamine deriv. was made, which yielded $Na_2[Pt(SO_3)_2en]$ most readily, indicating the cis structure of the disulfite. Reaction of 2 $Na_2SO_3.7H_2O$ with K_2PtCl_4 gave at first the colorless Na_4 salt, which slowly dissolved and gave a yellow soln.; this on addn. of MeOH gave yellow *cis*-$Na_2K[Pt(SO_3)_2Cl_2]$. $Pt(NH_3)_4Cl_2$ reacts with $[Pt(SO_3)_2Cl_2]^{4-}$ yielding $[Pt(NH_3)_4][Pt(SO_3)_2Cl_2]$. Reactions of 3 $Na_2SO_3.7H_2O$ with K_2PtCl_4 or Na_2PtCl_4 also proceeds similarly but re-soln. of the Na_4 salt is incomplete because it is present in too large an amt. for complete conversion to $Na_4[Pt(SO_3)_2Cl_2]$. Equimol. reaction of chloroplatinites with Na_2SO_3 gives a little Na_4 salt ppt., which rapidly redissolves and half of the Na_2PtCl_4 remains in excess; the reaction may be visualized as formation of $Na_4[Pt(SO_3)_2Cl_2]$. Hence 4:1 mol. proportions of sulfite reagents with chloroplatinite lead to complete replacement of inner sphere Cl by sulfite groups, but smaller proportions yield derivs. with residual Cl in the inner sphere. Reaction of equimol. amts. of $[Pt\ tu_4]Cl_2$ and $Na_2SO_3.7H_2O$ gave colorless $[Pt\ tu_4SO_3]$, almost insol. in H_2O; use of 4 mols. of sulfite gave colorless $Na_2[Pt\ tu_2(SO_3)_2].5H_2O$, while larger proportions gave $Na_4[Pt(SO_3)_4]$ on heating. Similarly $[Pt(NH_3)_4]Cl_2$ gave needles of yellow $[Pt(NH_3)_4SO_3]$, while increased amt. of the sulfite gave $Na_2[Pt(SO_3)_2(NH_3)_2].2H_2O$, colorless plates, having trans structure, since it does not react with ethylenediamine. It is stable, and further replacement of NH_3 groups requires an excess of the sulfite. Reaction of 2 mols. thiourea with 1 mol. $Na_4[Pt(SO_3)_4]$ gives colorless $Na_2[Pt\ tu_2(SO_3)_2].5H_2O$, which probably has the trans structure; the use of 3 mols. thiourea yields $[Pt\ tu_3SO_3]$ and the last sulfito group can be removed only by large excess of thiourea on heating, yielding $[Pt\ tu_4]SO_3$. Reaction product of Pt dichlorodisulfite with thiourea yields $[Pt\ tu_3SO_3]$, with intermediate formation of $Na_2[Pt(SO_3)_2tu_2].3H_2O$. Heating $Na_4[Pt(SO_3)_4]$ for several hrs. with concd. NH_4OH leads to soln., and cooling gives several cryst. forms; re-soln. in NH_4OH and concn. give homogeneous $Na_2[Pt(SO_3)_2(NH_3)_2].3H_2O$; if the Na_4 salt is only partially dissolved in hot NH_4OH and let stand at room temp., the filtrate on concn. yields colorless $Na_4[Pt(SO_3)_2NH_3]$. Treatment of the yellow soln. of Pt dichlorodisulfite with cold NH_4OH gives colorless $Na_2[Pt(SO_3)_2(NH_3)_2].4H_2O$, a trihydrate forms on long heating with concd. NH_4OH. The labilization of 2 Cl groups indicates strong trans effect of the sulfito groups.

G. M. Kosolapoff

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[Research in the field of chromatography transactions of the All-Union Conference on Chromatography, November 21-24, 1950] Issledovaniia v oblasti khromatografii; trudy Vsesoiuznogo soveshchaniia po khromatografii, 21-24 noiabria 1950 g. Moskva, Izd-vo Akademii nauk SSSR, 1952. 225 p. (MLRA 6:5)

1. Akademiya nauk SSSR. Otdelenie khimicheskikh nauk.
(Chromatographic analysis)

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RYABCHIKOV, D.I.

Complex compounds and their use in analytical chemistry. J. Anal. Chem. U.S.S.R. 7, 35-44 '52 [Engl. translation]. Zhur. Anal. Khim.
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RYABCHIKOV, D. I., SENYAVIN, M. M., FILIPPOVA, K. V.

Chemistry, Analytical

Comparative characteristics of some ion exchange substances. Zhur. anal. khim. 7 no. 3 (1952).

Conducted a comparative study of domestic cationites and anionites, comparing them with the best foreign specimens with the aim of using ion-exchange resins in chemical analysis. According to their bulk specific gravities and swellings, the most suitable resins were the domestic catiohite, SBS; and the domestic anionite, NMG-1. In magnitude of overall exchange capacity, within a broad pH interval, SDV-1, SDV-2, and SBS were the most suitable cationites. The authors mentioned cationites with carboxyl functional grpups, KM. They recommended the anionite, NMG-1, for analytical purposes. 261T18

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RYABCHIKOV, D. I.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Analytical Chemistry

Use of an ion-exchange chromatographic method in the analysis of copper-iron ceramic alloys and bronzes. D. I. Ryabchikov and V. B. Bukhbarov. *J. Anal. Chem. (U.S.S.R.)* 7, 417-24(1952)(Engl. translation).—See *C.A.* 47, 4787*a*. H. L. H.

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Obshchaia khimiia [General chemistry]. Moskva, Uchpedgiz, 1953. 428 p

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RYABCHIKOV, D.I.; SENYAVIN, M.M.

Chromatographic analysis. Zhur.anal.khim. 8 no.4:195-210 Jl-Ag '53. (MLRA 6:8)

1. Institut geokhimii i analiticheskoy khimii imeni V.I.Vernadskogo Akademii nauk SSSR, Moscow. (Chromatographic analysis)

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RYABCHIKOV, D.I.

Analytical Abst.
Vol. 1 No; 2
Feb. 1954
General Analytical Chemistry

4
(3) Chem

225. Comparative characteristics of some ion-exchange materials. II. D. I. Ryabchikov, M. M. Senyavin and K. V. Filippova (*J. Anal. Chem., U.S.S.R.*, 1953, 8 [4], 220-224).—Earlier data (*Brit. Abstr. C*, 1953, 44) are supplemented by results of experiments on swelling capacity and sp.gr. of air-dried and oven-dried ion-exchange substances, and on their exchange capacities at various pH values.

5-21-54 mcf G. S. SMITH

Inst. Geochem. & Analytical Chem. im. Vernadskiy, AS USSR

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RYABCHIKOV, B.I.

1829. Chromatographic separation of molybdenum and rhenium. D. I. Ryabchikov and A. I. Lazarev (*Compt. Rend.* [redacted], 1953, 93 [4], 777–779).—As in acid solution Re^{VII} forms the singly charged ion $ReO_3^{\cdot}$, while Mo^{VI} forms the doubly charged $MoO_3^{\cdot\cdot}$, the latter can be retained on cationites while $ReO_3^{\cdot}$ passes through unadsorbed. The active groups of cationites in order of decreasing adsorbing power for Mo are: $\cdot SO_3 \cdot OH$ < $\cdot CH_2 \cdot SO_3 \cdot OH$ < $\cdot COOH$ < ($\cdot SO_3 \cdot OH$ and $\cdot OH$). Various anionites adsorb MoO_4'' and ReO_4' poorly in alkaline soln., whilst in acid soln., Re is preferentially adsorbed, because of the greater stability of ReO_4'. MoO_4'' can be completely adsorbed by activated Al_2O_3 at pH values between 1 and 8.

R. C. MURRAY

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RYABCHIKOV, D.I.

USSR/Chemistry - Analytical

Card 1/1 : Pub. 145 - 3/14

Authors : Ryabchikov, D. I., and Bukhtyarov, V. E.

Title : Determination of beryllium in bronze through the application of a cationite

Periodical : Zhur. anal. khim. 9/4, 196-198, Jul-Aug 1954

Abstract : A method of determining Be in bronzes through the application of SBS type cationites is described. The new method is similar to the one used in determining Be in artificial mixtures in the presence of Al and Fe. Results obtained in determining Be in bronzes are tabulated. Three USSR references (1936-1952). Tables.

Institution : .....

Submitted : May 5, 1954

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