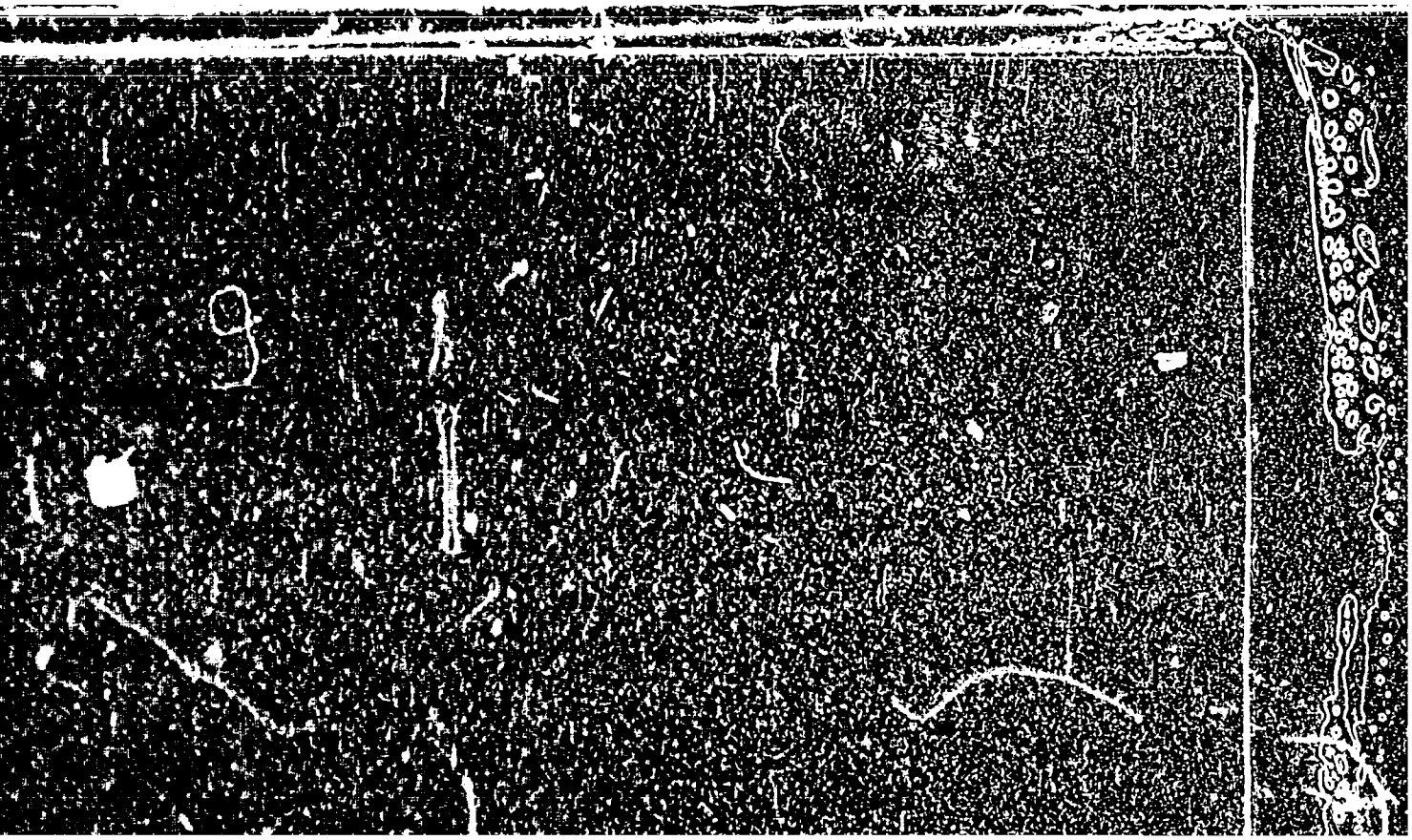
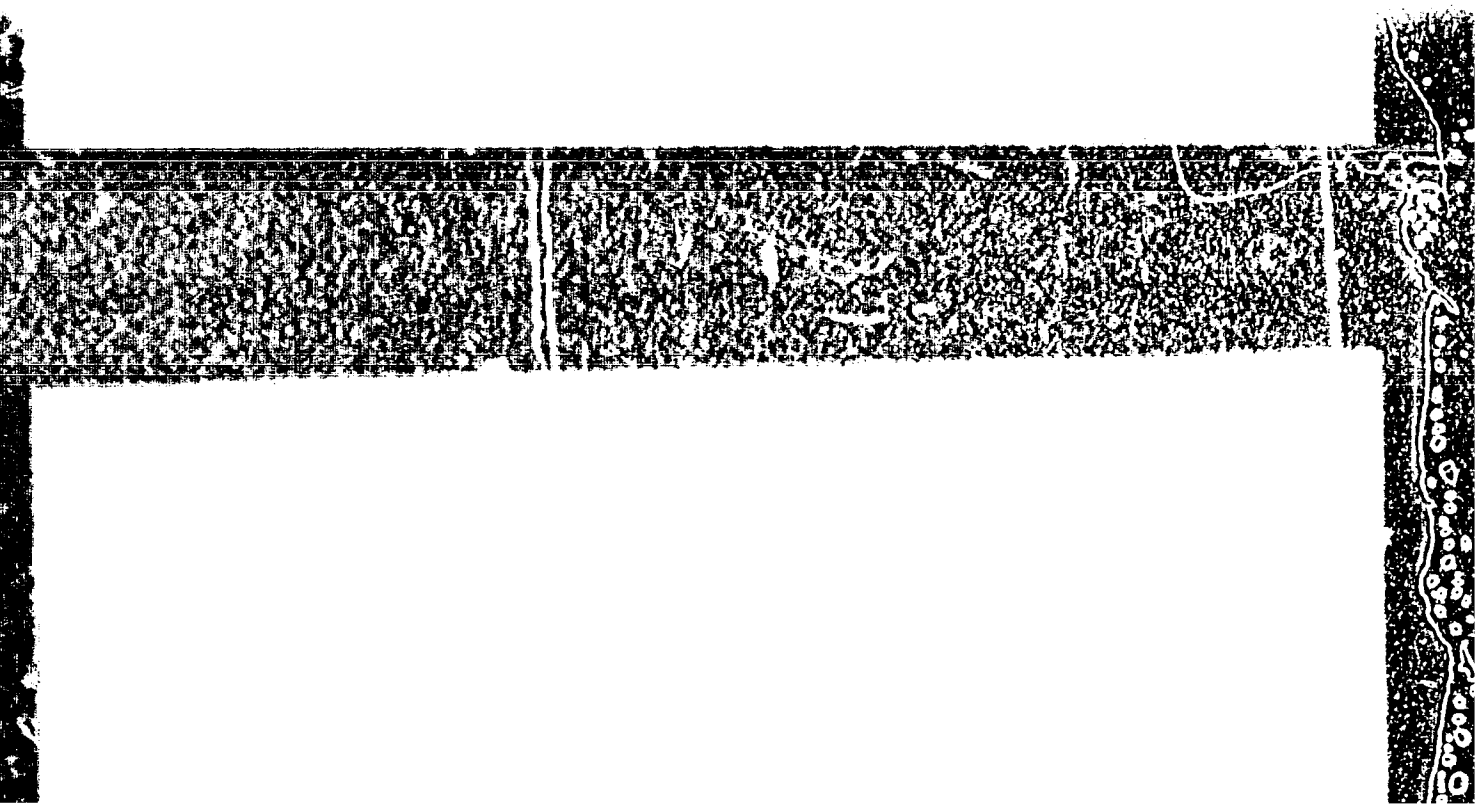
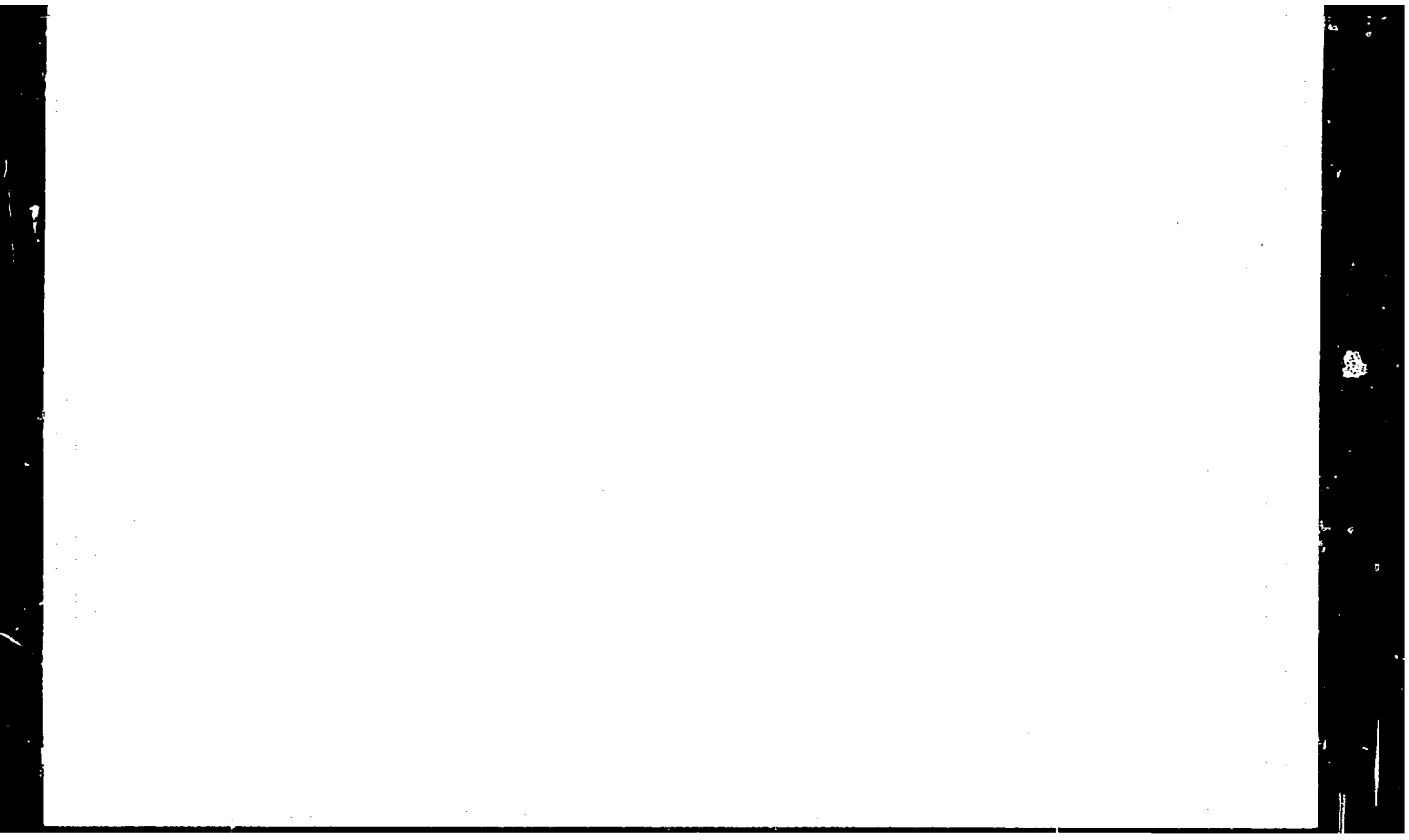
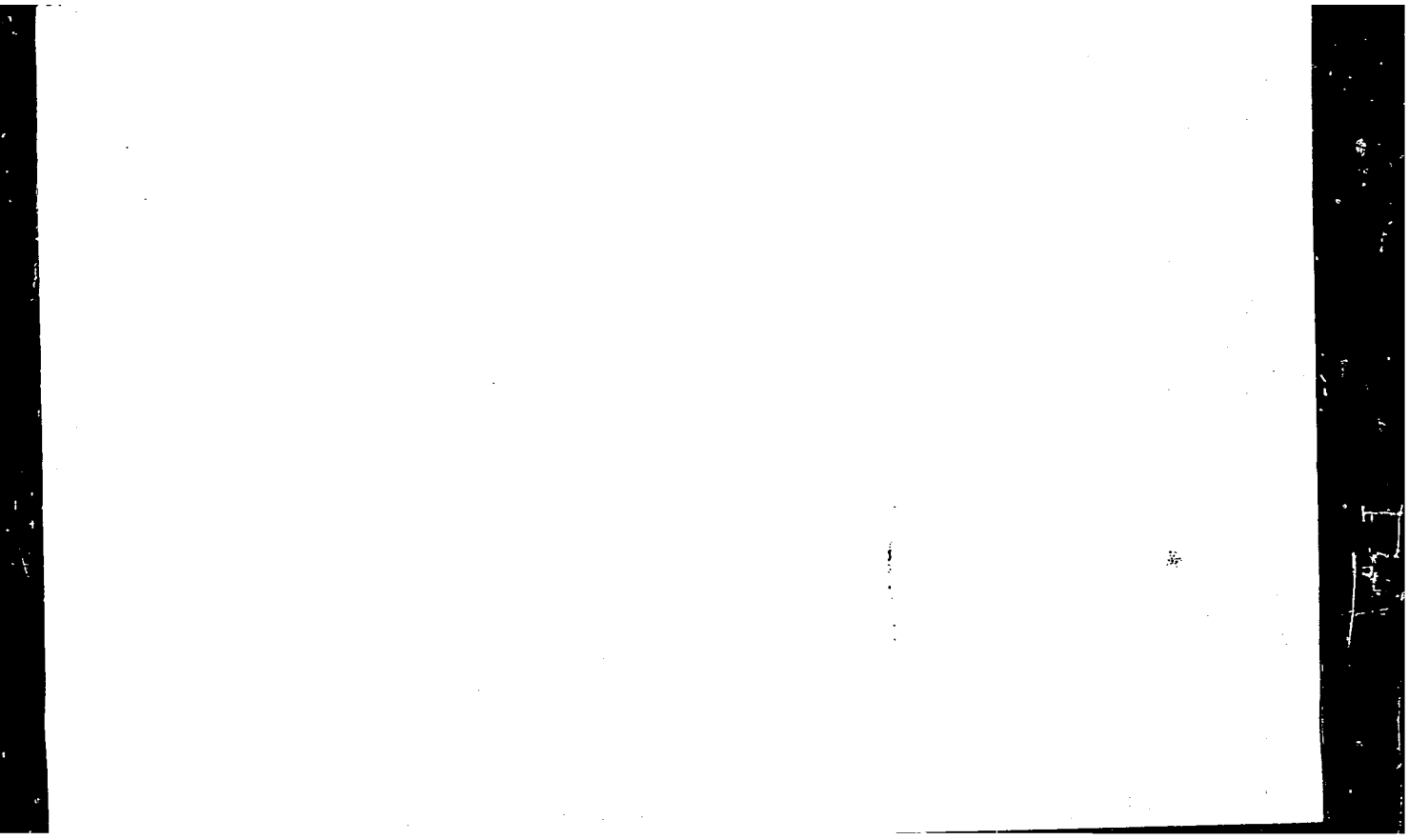




APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100310001-5"





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[Pathological anatomy] Patologicheskaia anatomiia. 2. izd., perer. i sokr. Moskva, Medgiz, 1961. 558 p. (MIRA 16:12)

(ANATOMY, PATHOLOGICAL)

ABRIKOSOV, G G

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Opredelitel' fauny I flory severnykh morey SSSR (Identification of fauna and flora of the northern seas of the USSR, by) G. G. Abrikosov (I dr.) Moskva, "Sovetskaya Nauka", 1948.
739 p. illus.
"Literatura": p. 701-706.

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ABRIKOSOV, G. G.

G. G. Abrikosov, N. A. Berezina, Z. S. Bronstein, N. S. Gayevskaya, V. I. Zatzepin, N. N. Kondakov, K. I. Meyer, V. I. Olifan, P. I. Usatchev, Z. A. Filatova, A. A. Shorigin, T. F. Chitchapova, Z. G. Shchedrin, V. A. Jashnov co-authors of the book "Definitions - Fauna and Flora of Northern Seas in USSR edited by Prof. N. S. Gayevski, and approved by the Ministry of USSR Higher Education as a manual for universities. State Publishing "SOVIET SCIENCE", Moscow - 1948.

SO: [redacted] 654015

ABRIKOSOV G.G.

"Guides to the fauna of the U.S.S.R." no.46. V.I. Zhadin. Reviewed by G.G. Abrikosov. Zool.zhur. 32 no.3:563-565 My-Je '53. (MLRA 6:6) (Gastropoda)

YAKOVLEVA, A.M. [author]; ABRIKOSOV, G.G. [reviewer].

"Armored mollusks of the seas of the U.S.S.R." A.M.IAkovleva; in the series "Opredeliteli po faune SSSR," no.45. Reviewed by G.G.Abrikosov. (MLRA 6:10)
Zool.zhur. 32 no.5:1032-1033 S-O '53.
(Mollusks) (IAkovleva, A.M.)

ABRIKOSOV, G G

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V.

NAUMOV, N.P.; ABRIKOSOV, G.G., redaktor; KOKOLEVA, L.I., tekhnicheskiy redaktor.

[Animal ecology] Ekologiia zhivotnykh. Moskva, Gos. izd-vo "Sovetskaia nauka," 1955. 532 p. (MLRA 9:1)
(Zoology--Ecology)

ABRIKOSOV, G.G.

"Polychaeta of the Far Eastern seas of the U.S.S.R." P.V.Ushakov. Reviewed by G.G.Abrikosov.[English summary in insert]. Zool.Zhur. 35 no.2:319-320 F '56. (MLRA 9:7)
(Polychaeta) (Ushakov, P.V.)

ABRIKOSOV, G.G.; BANNIKOV, Andrey Grigor'yevich; BEKKER, E.G.; BOBRINSKIY, Nikolay Alekseyevich; LEVINSON, L.B.; MATVEYEV, Boris Stepanovich, professor; PARAMONOV, A.A.; GAMZAYEVA, M.S., tekhnicheskiy redaktor

[A course in zoology; in two volumes] Kurs zoologii; v dvukh tomakh. Pod obshchei red. V.S.Matveeva. Izd. 5-e. Moskva, Gos. izd-vo "Sovetskaia nauka." Vol. 2. [Chordata] Khordovye. 1956. 443 p. (MLRA 10:2)
(Chordata)

ABRIKOSOV, G. G.

25-6-7./46

SUBJECT: USSR/Protistology

AUTHOR: Abrikosov, G.G., Candidate of Biological Science, Lecturer at "MGU"

TITLE: In the World of Unicellular Animals (V mire odnoklstochnykh)

PERIODICAL: Nauka i Zhizn' - June 1957, # 6, pp 15-17 (USSR)

ABSTRACT: Protistology is the science about unicellular animals and plants. It was discovered that many of the unicellular animals cause diverse diseases in man and animals, as for example malaria and amebic dysentery. As scientists were able to investigate the essential features of these lowest species of animals, doctors are now able to prevent or cure diseases caused by them. Some of the unicellulars are even useful as food to aquatic organisms which in their turn form the basic nourishment for fish. Other species, having skeletons consisting of mainly calcium, formed during long periods of time layers of rocks which are now used for construction purposes.

The article contains one picture and five drawings.

Card 1/2

25-6-7/46

TITLE: In the World of Unicellular Animals (V mire odnokletochnykh)

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress

Card 2/2

MoskovskiY gosudarstvennyY universitet.

АБРИКОСОВ, Г. Г.

ABRIKOSOV, G.G. (Moskva)

Pogonophora, a new type of invertebrates. Usp.sovr.biol. 44 no.2: 232-240 S-O '57. (MIRA 10:12)
(POGONOPHORA)

ABRIKOSOV, G.G.

"Distribution of shipworms in seas of the U.S.S.R." by P.I. Riabchikov. Reviewed by G.G. Abrikosov. Zool. zhur. 37 no.9: 1419-1420 S '58. (MIRA 11:10)
(Shipworms)

ABRIKOSOV, G.G.

"Cirripedia in seas of the U.S.S.R." by N.I.Tarasov, G.B.Zevina.
Reviewed by G.G. Abrikosov. Zool.zhur. 37 no.10:1575-1576 O '58.
(Cirripedia) (Tarasov, N.I.) (Zevina, G.G.)

ABRIKOSOV, G.

Pogonophora, a new type of invertebrate. p. 83

ANALELE ROMINO-SOVIETICE. SERIA BIOLOGIE (Academia Republicii Populare Romine. Institutal de Studii Romino-Sovietic
Bucuresti, Rumania
Vol. 13, no. 2, April/June 1959

Monthly list of East European Accession Index (EEAI), LC Vol. 8, No. 11
November 1959
Uncl.

ABRIKOSOV, G.G.

Polyzoa of the Caspian and Aral seas. Zool.zhur. 38 no.5:694-701 My '59. (MIRA 12:7)

1. Chair of Invertebrate Zoology, Moscow State University.
(Caspian Sea--Polyzoa) (Aral Sea--Polyzoa)

ABRIKOSOV, G.G.

A new immigrant in the Caspian Sea. Zool. zhur. 38 no.11:1745-1746 N '59 (MIRA 13:3)

1. Chair of Invertebrate Zoology, Moscow State University.
(Caspian Sea--Polyzoa)

17(4) SOV/2o-126-4-58/62

AUTHOR: Abrikosov, G. G.

TITLE: On the Generic Subdivisions of the Phylactolaemata Fresh Water Bryozoa (O rodovykh podrazdeleniyakh pokrytorotykh (Phylactolaemata) presnovodnykh mshanok)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 4, pp 898 - 9o1 (USSR)

ABSTRACT: About 75% of the fresh-water bryozoa belong to the group only living in fresh water mentioned in the title. The problem of the system within this group is still very unclear, in particular the generic subdivisions are not determined. There is no accurate criterion of sorting the species. Among the 13 species described at different points of time, some were rapidly eliminated, others have been interpreted in a differnt way by different investigators. The following classification of statoblasts (Ref 6) - in the author's opinion the only good characteristic - has been suggested: flotoblasts and sessoblasts. In this connection, a revision of the generic classification of some forms is necessary (Refs 3,4,7). Figure 1 : 6 shows characteristic spinoblasts of such a kind from South Africa

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On the Generic Subdivisions of the Phylactolaemata Fresh Water Bryozoa SOV/20-126-4-58/62

(Ref 7): (Lophopus) capensis (capenensis) (abstracter's note: evidently a misprint) (Sollas, 1908). For this kind, the author creates a new species (generic name ?): Lophopusella gen. n. Also Stolella should be revised (Refs 1,5,6), which is termed by the author as synonymous to Plumatella. He puts forward a principle of determination of species. Finally, the phylogenesis and the evolution of statoblasts are discussed (Fig 1). There are 1 figure and 7 references, 7.

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

PRESENTED: February 5, 1959, by Ye. N. Pavlovskiy, Academician

SUBMITTED: January 29, 1959

Card 2/2

17 (4)

AUTHOR: Abrikosov, G. G. SOV/20-126-5-65/69

TITLE: On the Question of the Geographic Distribution of the Phylactolaemata of Fresh-water Bryozoa (K voprosu o geograficheskom rasprostranenii pokrytorotykh (Phylactolaemata) presnovodnykh mshanok)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1139 - 1140 (USSR)

ABSTRACT: The problem mentioned in the title is still hardly investigated. Several researchers are of opinion that these animals are, widely spread (Cosmopolites) and that their distribution is irregular. Thereby considerations are expressed that with the said problem still a lot is unclear. Investigations of the material of this family from the Dal'niy Vostok (Far East) of the USSR led to some interesting results. The most important was the possibility of a fauna analysis of these animals of all East and Southeast Asia. This for the first time made it possible to arrive at conclusions about the geographic distribution and to bring at least a certain clearness in the said "obscurity" (Ref 3). Comparison material is available (Refs 2,4,6,10). All data are given in table 1 wherefrom the following conclusions can be

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made: 1) There are really species among the Phylactolaemata covering a wide area enclosing the whole territory mentioned above and extending far beyond it (species 1,4,5,11). 2) Besides these there exist others covering only a very narrow area (species 7,14). 3) There are a number of holarctic species missing in tropic and subtropic lands (species 6,18). 4) On the contrary there are a number of tropic and subtropic species missing in temperate zones (species 9,16,17). 5) There are kinds occurring obviously only in the concerning district (species 10,12,15). Primorskiy kray (Pacific maritime districts) and adjacent districts are transition zones. At the same time the above induces to the statement that the geographic distribution of the phylactolaematous fresh-water Bryozoa is not irregular as is affirmed often but it has its rules being conditioned by geological and critical reasons (total climatic factors, character of water etc.). At the concerning Bryozoa group the latter are the most frequent. There are 1 table and 10 references, 1 of which is Soviet.

On the Question of the Geographic Distribution of the Phylactolaemata of Fresh-water Bryozoa SOV/20-126-5-65/69

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

PRESENTED: February 5, 1959, by Ye. N. Pavlovskiy, Academician

SUBMITTED: January 9, 1959

Card 3/3

17(4)

AUTHOR: Abrikosov, G. G. SOV/20-126-6-64/67

TITLE: On the Generic Subdivisions and Geographical Distribution of Gymnolaemata Bryozoa in Continental Waters (O rodovykh podrazdeleniyakh i geograficheskom rasprostranenii golorotykh (Gymnolaemata) mshanok kontinental'nykh vodoyemov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 6, pp 1378-1380 (USSR)

ABSTRACT: On the whole, Gymnolaemata are a maritime group. Only few have penetrated into freshwater and brackish water, but only representatives of the order Ctenostomata (Ref 5). Since the discovery of the latter (1831) a series of genera has been described. On the basis of external and anatomical characteristics 6 genera can be distinguished: Paludicella, Pottsiella, Hislopia (= Norodonia, Echinella and Norodomia), Arachnoidea (= Arachnidia), Victorella and Tanganella which comprise 15 species. Apart from these, Bowerbankia also penetrates into brackish waters of sea shores (Ref 4). According to the most modern system (Ref 22) the first 4 genera belong to the subgenus Carnosa, whereas the rest belongs to the Stolonifera. At present, the freshwater Gymnolaemata of nearly all the world

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are sufficiently explored (Refs 9, 11, 17-19, 23). This makes possible an analysis of their distribution (Fig 1) which results in the following conclusions: 1) No true freshwater genus of the Ctenostomata is distributed all over the world. Such a distribution is only to be found as a secondary distribution with the brackish water genus Victorella. 2) The Ctenostomata of continental waters can be divided into 3 groups according to their distribution. The distribution area of each group reflects the degree to which they have penetrated into freshwater. I. Only Paludicella. Apparently the oldest group of the freshwater Ctenostomata . They have developed the so-called hibernating buds which make it possible for them to survive under unfavourable environmental conditions. They have, however, not become cosmopolitan and may be regarded as holarctic: they are distributed from Greenland (Ref 24) to Siam (Ref 10) and Guatemala (Ref 20), here, however, as special genus (P. pentagonalis). On the Southern hemisphere they are found in New Zealand (Ref 16) where they have most likely been introduced. Their antiquity is proved by the fact that it is impossible to trace a parent among the maritime forms of Ctenostomata.

On the Generic Subdivisions and Geographical Distribution of Gymnolaemata Bryozoa in Continental Waters

SOV/20-126-6-64/67

II. Pottsiella and Hislopia. They do not penetrate into freshwater to the same degree and have only relatively small areas of distribution (Ref 19)(Fig 1). III. Inhabitants of brackish waters of the sea shores: Victorella and Tanganella. Their maritime parents have not yet been completely traced (Ref 13). Arachnoidea is in a somewhat isolated place and has so far only been found in lake Tanganjika (Ref 21). It is interesting to note that 2 other genera are inhabitants of the sea. If this is really true this genus would have to be regarded as the "youngest" representative of the Ctenostomata in freshwater. Summarizing the facts it has to be said that the distribution of the freshwater Gymnolaemata follows its own laws which are conditioned by geological as well as ecologic causes. The concept of this group being cosmopolitan has to be abandoned. There are 1 figure and 24 references, 8 of which are Soviet.

PRESENTED: March 19, 1959, by Ye. N. Pavlovskiy, Academician

SUBMITTED: March 10, 1959

Card 3/3

KOLOSHVARI, G.; ABRIKOSOV, G.G.

Find of a representative of the class Kamptozoa in the fresh waters of Hungaria. Zool. zhur. 39 no.11:1735-1737 N '60. (MIRA 14:1)

1. Systematic-Zoological Institute of Szeged University (People's Republic of Hungary) and the Department of Invertebrate Zoology Moscow State University.
(Tisza River--Polyzoa)

ABRIKOSOV, G.G.; BANNIKOV, Andrey Grigor'yevich; BEKKER, E.G.; BOBRINSKIY, Nikolay Alekseyevich; LEVINSON, L.B.; MATVEYEV, Boris Stepanovich, prof.; PARAMONOV, A.A.; PETROVSKAYA, L.P., red.izd-va; YEZHOVA, L.L., tekhn.red.

[Zoology course in two volumes] Kurs zoologii v dvukh tomakh. Pod red.B.S.Matveeva. Izd.6. Moskva, Gos.izd-vo "Vysshaia shkola." Vol.1. [Invertebrate zoology] Zoologiia bespozvonochnykh. Pod red. G.G.Abrikosova i L.B.Levinsona. Izd.6. 1961. 561 p. Vol.2. [Vertebrate zoology; Chordata] Zoologiia pozvonochnykh; khordovye. Pod red. B.S.Matveeva. Izd.6. 1961. 473 p.

(MIRA 14:6)

(Zoology)

ABRIKOSOV, G.G.

Freshwater bryozoans in the waters of the Soviet Far East.
Sbor. trud. Zool. muz. MGU 8:103-111 '61. (MIRA 15:5)
(Soviet Far East--Polyzoa)

ABRIKOSOV, G.G.

Systematics and geographical distribution of the genus Fredericella (Bryozoa, Phylactolaemata). Zool. zhur. 40 no.3:334-339 Mr '61. (MIRA 14:3)

1. Department of Invertebrate Zoology, State University of Moscow.
(Polyzoa)

ABRIKOSOV, G.G.

"Hydroidea and hydromedusae of marine, brackish, and fresh waters of the U.S.S.R." by D.V.Naumov. Reviewed by G.G.Abrikosov. Zool. zhur. 40 no.9:1431-1432 S '61. (MIRA 14:8)
(Hydrozoa) (Naumov, D. V.)

AERIKOSOV, G.G.

Fauna of Lake Ochrida; Bryozoa, Phylactolaemata. Zool. zhur. 42 no.9:1409-1410 '63. (MIRA 16:12)

1. Department of Invertebrate Zoology, State University of Moscow.

ABRIKOSOV, G.G.; KOSOVA, A.A.

Occurrence of the tropical freshwater bryozoan Lophopodella carteri (Bryozoa, Phylactolaemata) in the outer Volga Delta. Zool. zhur. 42 no.11:1724-1726 '63. (MIRA 17:2)

1. Department of Invertebrate Zoology, State University of Moscow and State Preserve of Astrakhan.

ABRIKOSOV, IVAN ALEKSEYEVICH DECEASED c1958

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MEDICAL ELECTROTHERAPY INSTUMENTS & APPARATUS

ABRIKOSOV, I. I.

and DERYAGIN, B. V. "Die Messung der Molekulen Zwischen Festen Koerpern bei Grossen Abstanden."

paper delivered at the Intl. Cong. on Surface Activity, London, 8-12 April 1957.

Angewandte Chemie, No. 16, 1957.

PRITULA, Yu.A.; ABRIKOSOV, I.Kh.; AVROV, P.Ya.; KAZACHENKO, A.A.; KILIGINA, N.I.; KULIKOV, F.S.; MEL'NIKOV, A.M.; TATARINOV, A.G.; TROYEPOL'SKIY, V.I.; TSYPLENKOV, G.G.; SHPIL'MAN, A.I.; DAYEV, G.A., vedushchiy red.; LINDTROP, N.T., red.; YASHCHURZHINSKAYA, A.B., tekhn.red.

[Volga-Ural oil-bearing region; oil potential] Volgo-Uralskaia neftenosnaia oblast'; neftenosnost'. Leningrad, Gostoptekhizdat, 1957. 175 p. (Leningrad, Vsesoiuznyi neftianoi nauchno-issledovatel'skii geologorazvedochnyi institut. Trudy, no.104). (MIRA 16:8)
(Volga-Ural region--Petroleum geology)

ABRIKOSOV, I.Kh.; DYUL'DINA, K.A.; DANILYAN, T.A.

Study of SnTe - PbTe system. Zhur. neorg. khim. 3 no.7:1632-1636 Jl '58. (MIRA 11:9)
(Tin tellurides) (Lead tellurides)

SOFRONITSKIY, P.A.; ABRIKOSOV, I.Kh.

Oil potential of Perm Province. Geol.nefti i gaza 3 no.10: 1-8 O '59. (MIRA 12:12)

1. Permskiy sovnarkhoz.
(Perm Province--Petroleum geology)

ABRIKOSOV, I.Kh.; SOFRONITSKIY, P.A.

Geology and oil potential of the upper and central Kama Valley.
Trudy VNIGNI no.13:181-215 '59. (MIRA 13:1)
(Kama Valley--Petroleum geology)

ABRIKOSOV, I.Kh.

Methods of prospecting for commercial oil fields in Perm Province. Trudy VNII no.33:67-78 '61. (MIRA 16:7)

1. Permskiy sovet narodnogo khozyaystva.
(Perm Province--Petroleum geology)

AMRIKOSOV, I.Kh.; FEDOROV, Yu.V.

Classification of wells. Geol. nefti i gaza 6 no.7:50-52 Jl '62.
(MIRA 15:6)

1. Permskiy sovnarkhoz i Kamskiy filial Vsesoyuznogo nauchno-issledovatel'skogo geologorazvedochnogo neftyanogo instituta.
(Oil wells--Classification)

ABRIKOSOV, Il'ya Khrisanfovich; KUZ'MINA, N.N., ved. red.; YAKOVLEVA, Z.I., tekhn. red.

[Oil and gas potentials of Perm Province] Neftegazonostnost' Permskoi oblasti. Moskva, Gostoptekhizdat, 1963. 213 p. (MIRA 16:7)

(Perm Province—Petroleum geology)
(Perm Province—Gas, Natural—Geology)

ABRIKOSOV, I.Kh.

Prospects for finding oil and gas in Perm Province. Trudy VNIGNI no.36:70-77 '63. (MIRA 17:9)

AMRIKOSOV, I.Kh.; VINNIKOVSKIY, S.A.

Development of the Yarino-Kamennyy Log oil field. Geol. nefti i gaza 7 no.10:9-13 O '63. (MIRA 17:10)

1. Ob"yedineniye Permneft'.

ABRIKOSOV, Kh. N.

The technique of American bee raising Moskva, Sel'khozgiz, 1946.
(Mic 52-188)

Microfilm AC-62

1. Bee culture - Russia

АБЯКОВ, Кн. Н.

33363. Sozdadim Pchelovodnyy Muzey. (Zadachi Nauch. - Issled. In-ta Pchelovodstva). Pchelovodstvo, 1940, No. 10, c. 54-56.

SO. Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1940

ABRIKOSOV, KH.N.

USSR/Farm Animals - Honey Bee. Q-5

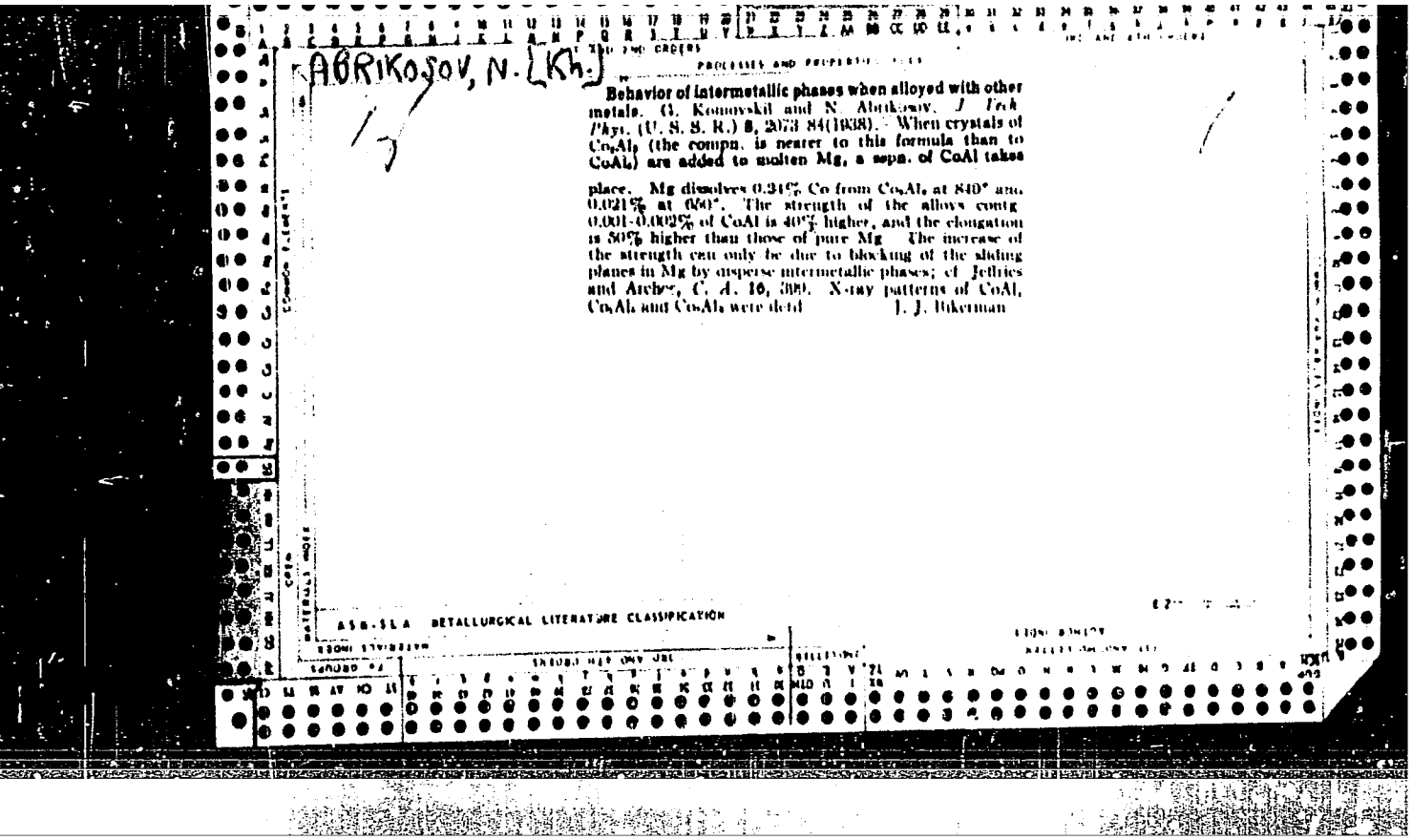
Abs Jour : Ref Zhur - Biol., No 7, 1958, 31037

Author : Abrikosov Kh.N.
Inst :
Title : From the History of Soviet Beekeeping (Personal Reminiscences).
(Iz istorii sovetskogo pchelovodstva (Po lichnym vospominaniyam)).

Orig Pub : Pchelovodstvo, 1957, No 8, 21-23.

Abstract : No abstract.

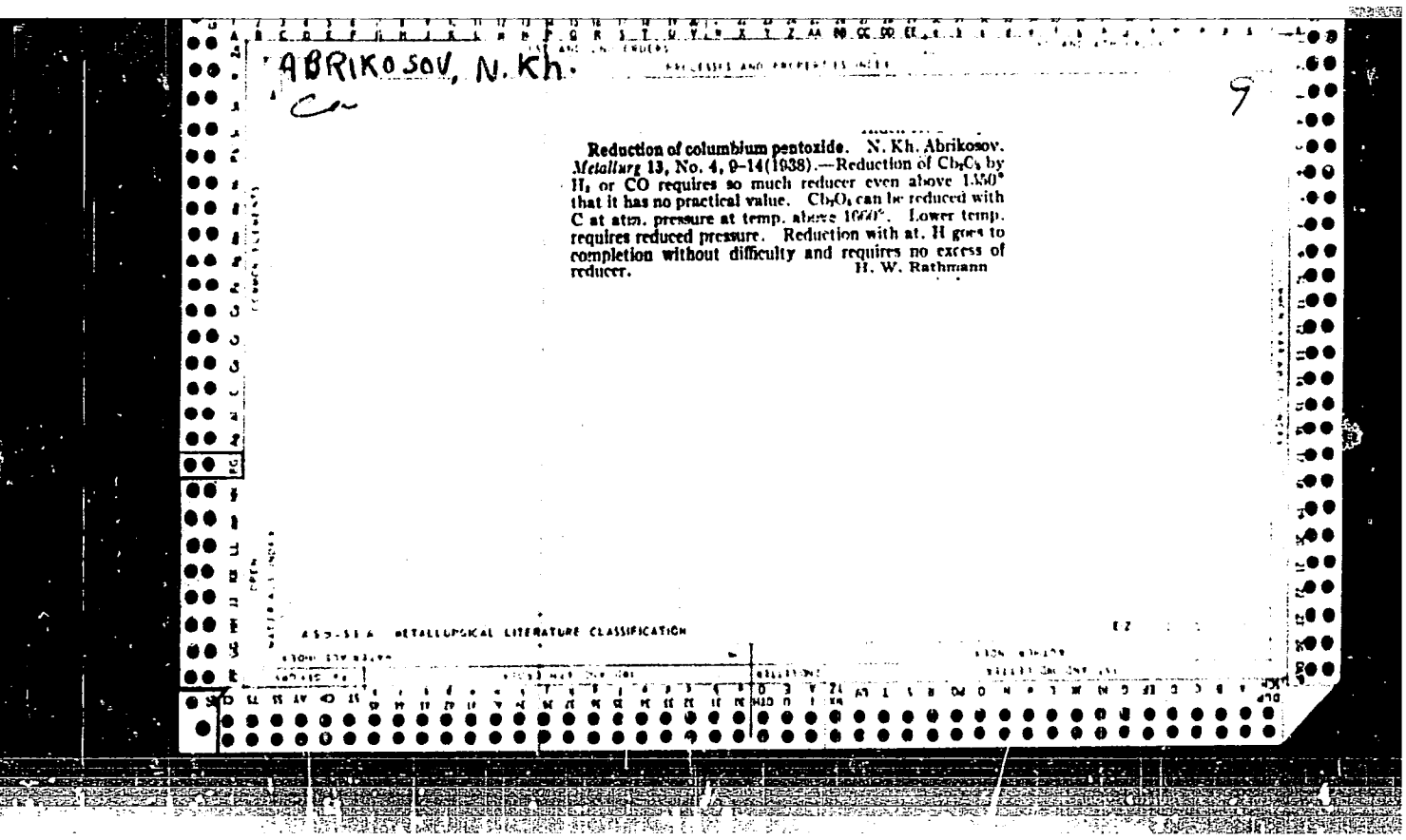
Card 1/1



ABRIKOSOV, N. [Kh.]

Behavior of intermetallic phases when alloyed with other metals. G. Kurdyumov and N. Abrikosov. *J. Tech. Phys. (U. S. S. R.)* **8**, 2073-84(1938). When crystals of Co_2Al_5 (the compn. is nearer to this formula than to $CoAl_3$) are added to molten Mg, a sepn. of CoAl takes place. Mg dissolves 0.31% Co from Co_2Al_5 at 840° and 0.021% at 660°. The strength of the alloys contg 0.001-0.002% of CoAl is 40% higher, and the elongation is 50% higher than those of pure Mg. The increase of the strength can only be due to blocking of the sliding planes in Mg by disperse intermetallic phases; cf. Jeffries and Archer, *C. A.* **16**, 388. X-ray patterns of CoAl, Co_2Al_5 and Co_4Al_9 were detd. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

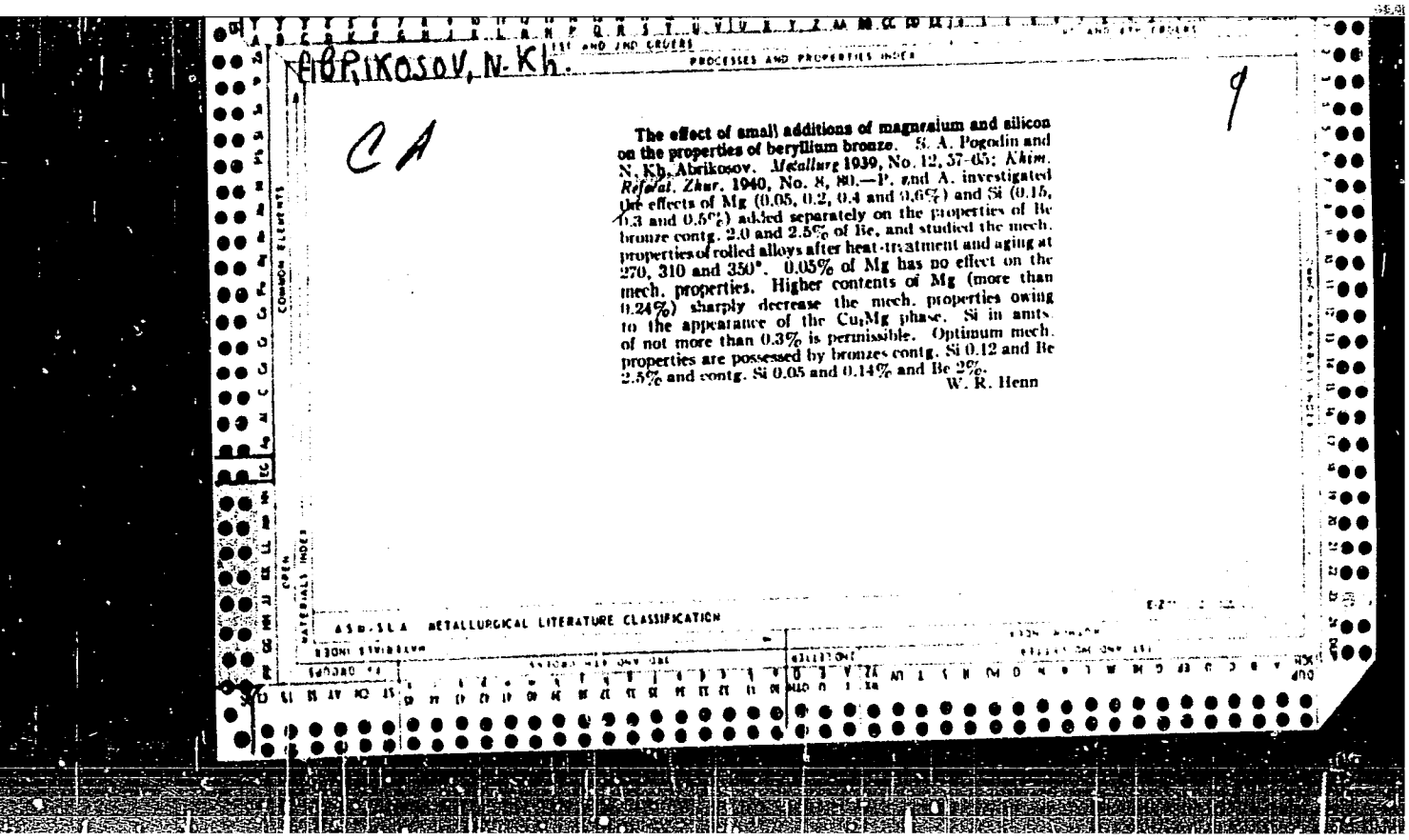


ABRIKOSOV, N. Kh.

9

Reduction of columbium pentoxide. N. Kh. Abrikosov. *Metallurg* 13, No. 4, 9–14(1938).—Reduction of Cb_2O_5 by H_2 or CO requires so much reducer even above 1350° that it has no practical value. Cb_2O_5 can be reduced with C at atm. pressure at temp. above 1660°. Lower temp. requires reduced pressure. Reduction with at. H goes to completion without difficulty and requires no excess of reducer. H. W. Rathmann

ASS-SEA METALLURGICAL LITERATURE CLASSIFICATION



ABRIKOSOV, N. Kh.

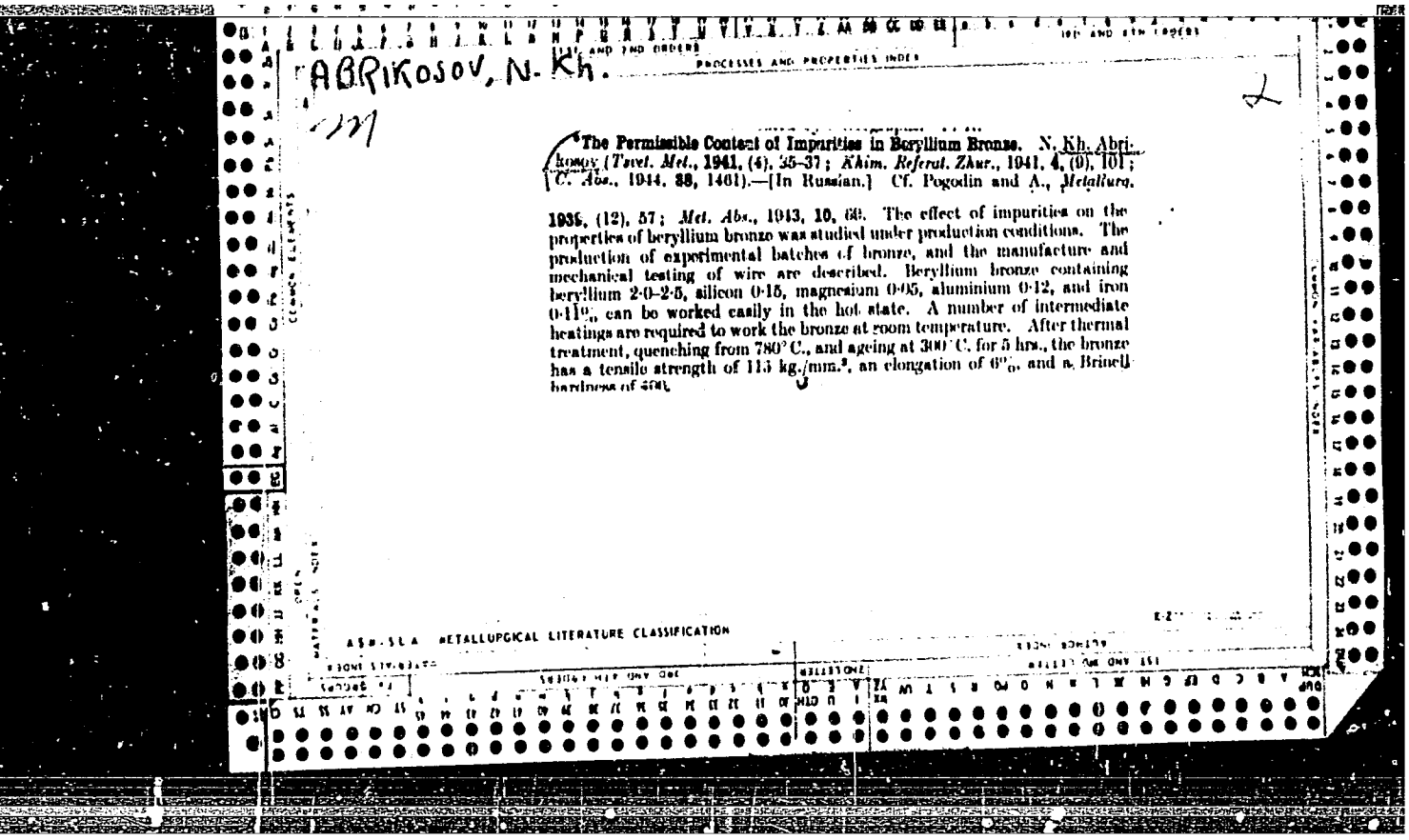
CA

9

The effect of small additions of magnesium and silicon on the properties of beryllium bronze. S. A. Pogodin and N. Kh. Abrikosov. *Metallurg* 1939, No. 12, 57–65; *Khim. Referat. Zhur.* 1940, No. 8, 80.—P. and A. investigated the effects of Mg (0.05, 0.2, 0.4 and 0.6%) and Si (0.15, 0.3 and 0.5%) added separately on the properties of Be bronze contg. 2.0 and 2.5% of Be, and studied the mech. properties of rolled alloys after heat-treatment and aging at 270, 310 and 350°. 0.05% of Mg has no effect on the mech. properties. Higher contents of Mg (more than 0.24%) sharply decrease the mech. properties owing to the appearance of the Cu_2Mg phase. Si in amts. of not more than 0.3% is permissible. Optimum mech. properties are possessed by bronzes contg. Si 0.12 and Be 2.5% and contg. Si 0.05 and 0.14% and Be 2%.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



ABRIKOSOV, N. Kh.

2

The Permissible Content of Impurities in Beryllium Bronze. N. Kh. Abrikosov (*Tsvet. Met.*, **1941**, (4), 35–37; *Khim. Referat. Zhur.*, 1941, **4**, (0), 101; *C. Abs.*, 1944, **38**, 1461).—[In Russian.] Cf. Pogodin and A., *Metallurg.* **1936**, (12), 57; *Met. Abs.*, 1943, **10**, 68. The effect of impurities on the properties of beryllium bronze was studied under production conditions. The production of experimental batches of bronze, and the manufacture and mechanical testing of wire are described. Beryllium bronze containing beryllium 2·0–2·5, silicon 0·15, magnesium 0·05, aluminium 0·12, and iron 0·1% can be worked easily in the hot state. A number of intermediate heatings are required to work the bronze at room temperature. After thermal treatment, quenching from 780° C., and ageing at 300° C. for 5 hrs., the bronze has a tensile strength of 115 kg./mm.², an elongation of 6%, and a Brinell hardness of 321.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ABRIKOSOV, N. Kh.

Properties of beryllium bronzes with lower beryllium content and with additions of other components. S. A. Pogosin, N. Kh. Abrikosov, and N. M. Elkhanes (State Sci.-Research Inst. Rare and Minor Metals, Moscow). *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 16, No. 2, 197–210 (1946).

The purpose of this investigation was to find Cu-Be alloys with a lower Be content (up to 1.5%) without lowering the desirable mech. properties of standard Be bronzes. Another purpose was to find a substitute for the costly Cu-W alloy. To this end a no. of Cu alloys with Ni, Cr, and Zr were studied. Satisfactory results gave a Cu alloy with Be 1.5 and Ni 0.28%. The heat-treatment of this alloy is the same as of ordinary Be bronze. The mech. properties of the heat-treated alloy were the same as those of Be bronze with 2.35% of Be. The greatest hardness at high temp. gave a Cu alloy with Be 1.5, Ni 0.2, and Cr 0.3%. Heated to 500° this alloy was harder and has a smaller electroresistance than Cu-W alloy. A Cu alloy with Be 0.1–0.5, Ni 0.2, and Cr 0.3% was suitable for spot-welding electrodes if water-cooled. By increasing the Be to 1–1.5% the alloy could be used for butt welding.

M. Hosch

CA
ABRIKOSOV, N. Kh.

Volume change in the formation of solid solutions in alloys. N. Kh. Abrikosov. *Doklady Akad. Nauk S.S.S.R.* 68, 511-14(1949).—A theoretical study was made of the available data on the vol. change on alloying Cu, Au, and Ag with up to 20 at. % of *b* subgroup elements of the 4th and 5th periods (Mendeleev table), of group VIIIa elements, and of Mn. $\Delta V = V_1 - V_2$, where V_1 is the actual at. vol. and V_2 is the calcd. vol. assuming the vols. of the two elements are additive. ΔV became increasingly neg. for a given solvent as the valence of the *b*-subgroup solute increased. ΔV was slightly pos. or neg. for group VIIIa elements, and relative at. size rather than chem. interaction was the main factor. Mn caused ΔV to be large in both Cu and Au. Possibly other *a*-subgroup elements also have this effect, which may contribute to the small solubilities and layering of liquids in such alloys.

A. G. Guy

1950

ABRIKOSOV, N. Kh. Dr. Chemical Sci.

"Physicochemical Investigation of the Nature of Alloys on a Copper-Beryllium Base." Sub 17 Oct 51, Inst of General and Inorganic Chemistry imeni N. S. Kurnakov, Acad Sci USSR.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

ABRIKOSOV, N. Kh.

1/2

(2)

Investigation of the system copper-beryllium. N. Kh. Abrikosov (N. S. Kurnakov Inst. Gen. Inorg. Chem., Acad. Sci. U.S.S.R., Moscow). *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei Neorg Khim., Akad. Nauk S.S.S.R.* 21, 101–15(1952).—Specimens of Cu-Be alloys contg. 3.75–16.6 at. % were heated at 840° for 10 hrs. and one series comprising the entire range of Be concn. was removed and quenched in water. The temp. was lowered to 800°, kept for 24 hrs., a series of specimens was removed and quenched. The temp. was lowered to 725° for 3 days, then to 650° for 5 days, to 500° for 9 days, and 350° for 29 days. At the end of each period a series of specimens was removed and quenched. The microstructure, thermal analysis, hardness, and elec. cond. of the alloys was studied for the purpose of establishing phase boundaries. In specimens quenched at 840° the boundary of α-solid soln. passes between 15.3 and 16.6 at. % Be, quenched at 800° this boundary passes between 14.2 and 15.3 at. %, at 725° it passes between 12.8 and 14 at. % Be, at 650° between 9.22 and 12.8 at. % Be. Of the specimens quenched from 500° only the ones contg. 3.75 at. % Be were free of α-phase decompn., and the ones quenched from 350° all showed decompn. of the α-phase. The max. soly. of Be in Cu is at 870° when it reaches 16.6 at. % and it drops at 350° to less than 3.75 at. %. For alloys contg. 17.4–34.7 at. % Be: up to 22 at. % Be the alloys had an end of solidification temp. 870° corresponding to the formation of the β-phase. On the melting diagram there was a min. at 860° and 28.1 at. % Be. This point is above the monophase area of the β-phase and is taken to indicate that the β-phase is formed by a peritectic reaction from the α-phase and liquid. The point of eutectic decompn. is at 578° and 31 at. % Be. Studies were also made on alloys with 36.7–55.4 at. % Be. On this part of the diagram of state the liquidus is made up by the crystn. curves of the β- and δ-phases. They intersect at 930° and 48.4 at. % Be. Alloys in this range were annealed and quenched at temps. 910-500°. At 900-700° γ, γ + δ, β, and β + γ phases were found, depending on the annealing temp. and the Be content. At 500° α + γ, γ, and γ + δ phases were found. As the annealing temp. rose, the two-phase β + γ area became narrower. The β + γ area has a max. at 800° and approx. 45 at. % Be. The hardness of the alloys detd. after annealing at 800–450° increased

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10-12-54 HEF

3/2 ABRIKOSOV, N. Kh.

from α through α + β to the β-phase. Then it started to decline through the β + γ phase, attained a min. in the γ-phase, and started to rise as the amt. of δ-phase rose. The electroresistance behaved in an analogous manner. Between the β and γ phase there is a series of continuous solid solns. The β and γ phases are considered as one berthollide formed as a solid soln. from the unstable in the free state polymorphic modification of Cu and CuBe. M. Hosch

ABRIKOSOV, N. Kh.

Chemical Abstracts
May 25, 1954
Metallurgy and Metallography

Investigation of the system copper-beryllium in the phase area. N. Kh. Abrikosov (N. S. Kurnakov Inst. Gen. Inorg. Chem., Acad. Sci. U.S.S.R., Moscow). *Trudy Sektora Fiz.-Khim. Anal., Inst. Obshchei Neorg. Khim. Akad. Nauk S.S.R.* 21, 116-20(1952).—For this investigation alloys with 53.4–83 at. % Be were used. Specimens were annealed and quenched at 850, 700, and 500° at which temps. they were kept for 12 hrs., 72 hrs., and 15 days, resp., before quenching in water. At 850° the δ-phase extended from 66 to 79 at. % Be and at 500° it extended from 70.5 to 78.5 at. % Be. The compd. $CuBe_3$, 75 at. % Be, is within the limits of a homogeneous δ-phase. The hardness of the alloys increased in the γ + δ area with increasing δ-phase. Reaching the δ-phase boundary the hardness declined, attaining a min. at a point corresponding to $CuBe_3$. Beyond this point the hardness increased until the other boundary of δ-phase and then dropped in the δ + ε area. The specific vol. was detd. on specimens annealed at 850°. The specific vol. curve had a min. point corresponding to $CuBe_3$. At this point the specific vol. underwent a compression of 8.7% compared to the specific vol. calcd. by the additivity rule. M. Hosch

1. ABRIKOSOV, N. Kh.

2. USSR (600)

4. Alloys

7. Conference on theory of metallic alloys. Vest. AN SSSR 22 no. 8, 1952

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

ZELIKMAN, A.N.; SAMSONOV, G.V.; KREYN, O.Ye.; STEPANOV, I.S., inzhener, retsenzent; TANANAYEV, I.V., retsenzent; POGODIN, S.A., professor, doktor, zaslushennyy deyatel' nauki i tekhniki, retsenzent; RODE, Ye.Ye., professor, doktor, retsenzent; ABRIKOSOV, N.Kh, doktor khimicheskikh nauk, retsenzent; SHAMRAY, F.I., doktor khimicheskikh nauk, retsenzent; MOROZOV, I.S., kandidat khimicheskikh nauk, retsenzent; BOOM, Ye.A., kandidat khimicheskikh nauk, retsenzent; NIKOLAYEV, N.S., kandidat khimicheskikh nauk, retsenzent; ZVORYKIN, A.Ya, kandidat khimicheskikh nauk, retsenzent; BASHILOVA, N.I., kandidat khimicheskikh nauk, retsenzent; VYSOTSKAYA, V.N., redaktor; KAMAYEVA, O.M., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor

[Metallurgy of rare metals] Metallurgiia redkikh metallov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 414 p. (MLRA 7:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Tananayev)
(Metals, Rare--Metallurgy)

PHASE I BOOK EXPLOITATION 820

Meyerson, Grigoriy Abramovich, and Zelikman, Abram Naumovich

Metallurgiya redkikh metallov (Metallurgy of Rare Metals) Moscow, Metallurgizdat, 1955. 608 p. 5,500 copies printed.

Reviewers: Bol'shakov, K. A., Doctor, Professor, Abrikosov, N. Kh., Doctor of Chemical Sciences, Maslyanitskiy, I. N., Doctor, Professor, Greyver, N. S., Doctor, Professor; Ed.: Vysotskaya, V. N.; Ed. of Publishing House: Kamayeva, O. M.; Tech. Ed.: Attopovich, M. K.

PURPOSE: This book is recommended as a textbook for students at metallurgical institutes and may also be useful to engineers and technicians.

COVERAGE: The book deals with the industrial production of refractory metals (tungsten, molybdenum, tantalum, niobium, vanadium, titanium, and zirconium) and the trace-associate metals (gallium, indium, thallium, germanium, selenium, tellurium, and rhenium). Physical and chemical properties are given, and fields of application are specified. The authors explain the theoretical and practical aspects of the production of pure metals and their more important alloys and chemical compounds. Chapters IV, VII, XIII-XVI, and Section 60

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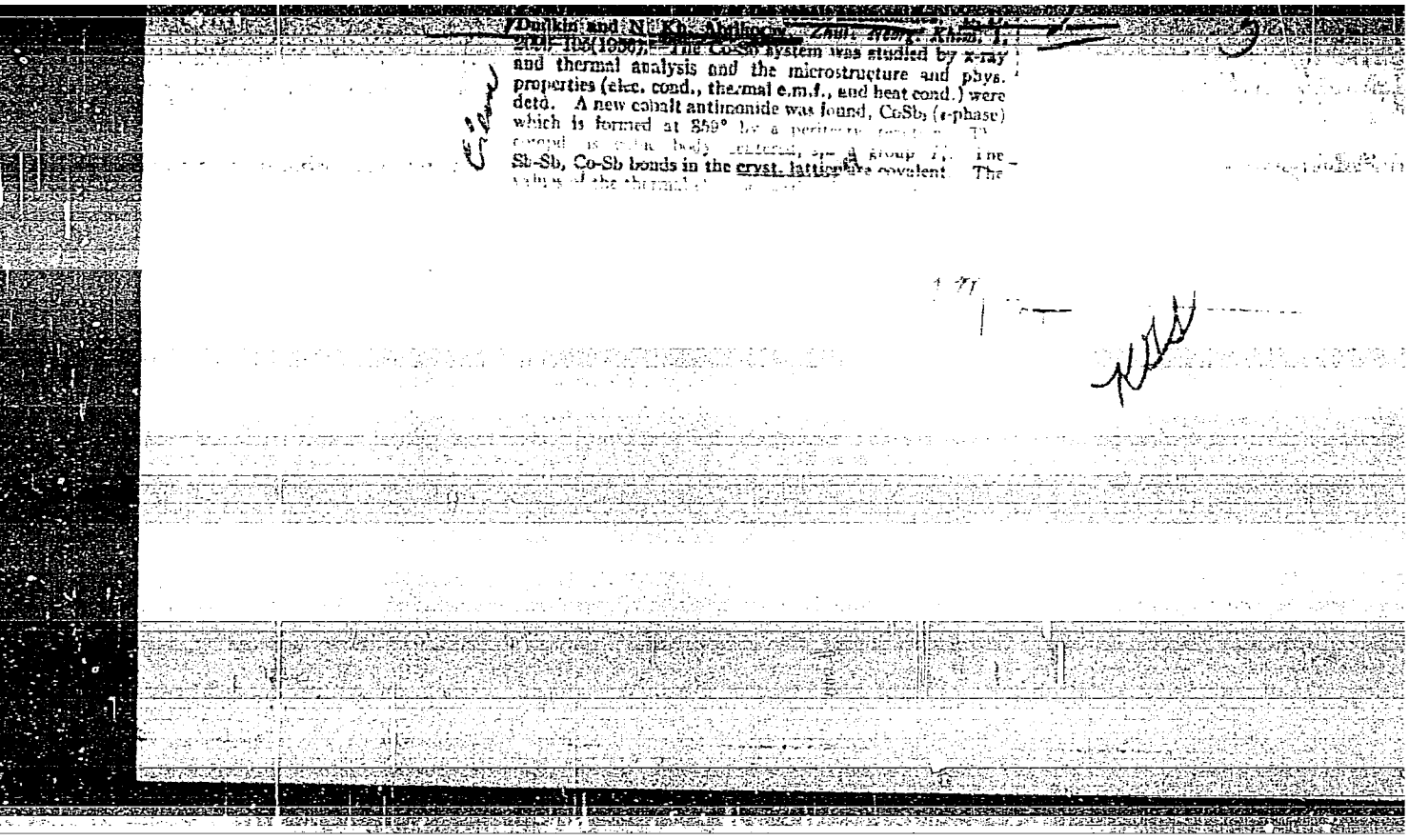

and thermal analysis and the microstructure and phys. properties (elec. cond., thermal e.m.f., and heat cond.) were detd. A new cobalt antimonide was found, $CoSb_3$ (ε-phase) which is formed at 859° by a peritectic

Sb-Sb, Co-Sb bonds in the cryst. lattice are covalent. The

USSR/Thermodynamics - Thermochemistry. Equilibria. B-8
Physical-Chemical Analysis. Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18500

Author : N.Kh. Abrikosov.
Inst : Institute of Organic and Inorganic Chemistry of Academy of Sciences of USSR.

Title : Study of System Fe - Si Within the Range of Compound $FeSi_2$.

Orig Pub : Izv. Sektora fiz. khim. analiza IONKh AN SSSR, 1956, 27, 157-163

Abstract : A part of the system Fe - Si in the range of leboite formation (phase of variable composition on $FeSi_2$ base) was studied by the methods of thermal analysis, of microstructure research, of x-ray phase and of the thermo-emf measurement of alloys hardened at 900 and 1000°. The phase graph was made more precise. A polymorphous transformation of $FeSi_2$ at 960 - 995° was discovered.

Card 1/1

Abrikosov N. Kh.

USSR/Thermodynamics - Thermochemistry. Equilibria. B-8
Physical-Chemical Analysis. Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18501

Author : N.Kh. Abrikosov, V.F. Bankina.
Inst : Academy of Sciences of USSR.
Title : Thermoelectrical Properties of $CrSb_2$ Compound.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 4, 627-628

Abstract : The thermo-emf and the electrical conductivity of alloys of chromium with antimony (80 - 85% of Sb by weight) were studied. The alloys were previously annealed at 550° 15 days. The minimum electrical conductivity and the maximum thermo-emf are at the concentration corresponding to $CrSb_2$. It was established that the compound $CrSb_2$ was a substance of the semiconductor type. Within the temperature range from 40 to 350°, the width of the forbidden zone is 0.16 ev, and above 350° it is 0.32 ev. The authors think that one of these values corresponds

Card 1/2

USSR/Thermodynamics - Thermochemistry. Equilibria. B-8
Physical-Chemical Analysis. Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18501

to the chemical binding among the chromium atoms, and the other corresponds to the binding of chromium atoms to antimony atons in the lattice of $CrSb_2$.

Card 2/2

Investigation of the PbTe - PbSe system. E. I. Elagina and N. Kh. Abrikosov. *Doklady Akad. Nauk S.S.S.R.* 111, 358 (1956). Alloys contg Pb, Te, and Se were prepd [illegible] pure Pb, Te, and Se. The cooling and heating curves [illegible] Photomicrographs of cast and annealed PbTe alloys, contg. 50 mol.% Te were reproduced and the state diagram and the changes of the lattice consts. of the PbTe-PbSe system were plotted. The mixt. formed a continuous system of solid solns. W. M. Sternberg

137-58-4-8073

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 243 (USSR)

AUTHORS: Dudkin, L.D., Abrikosov, N.Kh.

TITLE: An Investigation of the Thermoelectric Properties of Cobalt Antimonides (Issledovaniye termoelektricheskikh svoystv antimonidov kobal'ta)

PERIODICAL: V sb.: Vopr. metallurgii i fiz. poluprovodnikov. Moscow, AN SSSR, 1957, pp 97-109

ABSTRACT: A physicochemical analysis of a Co-Sb system containing > 50% Sb was made, and the effect of adding Ni on the properties of the compounds formed was investigated. The specimens were smelted under a flux, spectrally pure, of Sb containing < 0.01% Pb and As, a slightly larger amount of Si, and powdered Co containing about 0.3% impurities. Metallographic and X-ray investigations were conducted, the electrical conductivity (C) was measured, and the thermoelectromotive force accompanying a temperature drop along the specimen of appx. 20°C was determined. The thermal analysis was run on a Kurnakov vertical pyrometer. The transient method (Ioffe, A.V., Ioffe, A.F., Zh. tekhn. fiz., 1952, Vol 22, Nr 12, p 2005) was employed to investigate the

Card 1/2

137-58-4-8073

An Investigation of the Thermoelectric Properties of Cobalt Antimonides

thermal conductivity of the alloys. The existence of a new compound, ε-$CoSb_3$, formed by a peritectic reaction at 859°C, was established. It has a body-centered cubic lattice of the type of skutterudite [(Co, Ni)As_3](a= 9.01 angstrom, Fedorov group I_n^5). Curves for the relation to temperature of the specific conductivity and the thermoelectromotive force for alloys similar in composition to the compounds $CoSb_3$ and $CoSb_2$ demonstrate the latter to be semiconductors. The width of the forbidden region in $CoSb_2$ and $CoSb_3$ is 0.2 and 0.5 electron volt, respectively, and the thermal conductivity rate of the lattice is $11 \cdot 10^{-3}$ and $12.3 \cdot 10^{-3}$ cal/degree C·cm. sec, respectively. The electron mobility in the $CoSb_3$ lattice is 290 $cm^2/v \cdot sec$. Investigations of the Co-Ni-Sb ternary system have revealed a continuous series of solid solutions between the γ phases of the binary systems and the terminations of a number of solid solutions based on the ε-$CoSb_3$ compound. The ternary solid ε solution spreads deep into the triangle of concentration until attainment of Ni: Co= 1:9. The C of the ε phase increases with increase in the Ni content, as the Ni apparently forms donor levels with low energies of activation in the forbidden region of $CoSb_3$, and yields excess electrons to the conducting region at relatively low temperatures, in which case the thermal conductivity of the lattice diminishes considerably. The temperature dependence of the C and the thermoelectromotive force also change significantly.

Card 2/2 P.S.

SOV/137 58-10-21450

Translation from: Referativnyy zhurnal, Metallurgiya, 1958 Nr 10, p 141 (USSR)

AUTHOR: Abrikosov, N. Kh.

TITLE: Semiconductive Compounds and Solid Solutions in Metallic Alloy Systems (Poluprovodnikovyye soyedineniya i tverdyye rastvory v metallicheskikh sistemakh)

PERIODICAL: Sb. tr. Voronezhsk otd Vses khim ov a im D. I Mendeleyeva, 1957, Nr 1, pp 75 83

ABSTRACT: A review of the properties of chemical compounds of the semiconductive type (SC) and of solid solutions based on semiconductive phases. The relationship of the variations in the properties of certain compounds to a variation in the portion of the ionic bond (B) between atoms in the compounds is illustrated. The peculiar properties of semiconductive alloys are noted, consisting in a very limited solubility of the components which form the compounds, a low rate of diffusion and, consequently, a slow rate of establishment of equilibrium during phase transformations. These peculiar properties are a result of the presence of directed valence B in SC crystals. Some laws governing the variations of the properties of solid solutions of semiconductive

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SOV/137-58-10-21450

Semiconductive Compounds and Solid Solutions (cont.)

alloys are discussed, in particular those of the Ge-Si, HgTe-HgSe, SnTe-PbTe systems, etc. A comparison with metallic systems is adduced.

A. A.

1. Semiconductors--Analysis 2. Semiconductors--Chemical properties

Card 2/2

ABRIKOSOV, N. Kh.

USSR/Physical Chemistry - Thermodynamics, Thermochemistry, Equilibria, Physical-Chemical Analysis, Phase Transitions. B-8

Abs Jour: Referat. Zhurnal Khimiya, No 2, 1958, 3799.

Author : L.D. Dudkin, N.Kh. Abrikosov
Inst :
Title : Study of Nickel Influence on Properties of Semiconductor Compound CoSb .

Orig Pub: Zh. neorgan. khimii, 1957, 2, No 1, 212-221.

Abstract: The influence of Ni additions on the properties of the semiconductor compound $CoSb_3$ discovered by the authors (RZh-Khim, 1957, 71107) was studied. The measurement of thermo-electrical properties indicates a pre-eminent metallic nature of atom bonds in NiSb and $NiSb_2$. An isotermal section of the ternary system Co-Ni-Sb in the range of less than 50% of Sb confirms the existence of a continuous solid solution between the δ - phases of the binary systems. The existence of a ternary solid

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Card : 1/2

AUTHOR: ABRIKOSOV, N.KH. PA - 2358

TITLE: Physical-Chemical Analysis of some Semitransparent Systems. (Fisiko-khimicheskiy analiz nekotorykh poluprovodnikovykh sistem, Russian).

PERIODICAL: Izvestiia Akad. Nauk SSSR, Ser. Fiz., 1957, Vol 21, Nr 1, pp 141 - 145 (U.S.S.R.)

Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: The author investigates the four systems Cr - Sb, Co - Sb, Fe - Si, and Bi - Te and concentrated his attention on obtaining the equilibrium in the alloys. The obtaining of equilibrium was controlled by various methods: investigation of microstructure, x-ray-analysis, investigation of various properties.

The system Cr - Sb: contains two chemical compounds: CrSb and $CrSb_2$. CrSb crystallizes immediately from the liquid at 1100°, $CrSb_2$ is produced by a peritectial reaction at 676°. $CrSb_2$ has metallic properties. Equilibrium in the alloys is obtained only slowly because of the slowness of peritectal reaction. Furthermore, $CrSb_2$ turns out to be a semiconductor.

The system Co - Sb contains besides the two already known compounds CoSb and $CoSb_2$ also $CoSb_3$. The last compound is produced by a peritectical reaction at 859°. The maximum on the isotherm al line of electric resistance corresponds to the compound $CoSb_3$. $CoSb_3$ has the structure of the scutterudite $CoAs_3$. CoSb has metallic properties, $CoSb_2$ and $CoSb_3$ are semiconductor-like compounds. The

Card 1/2

78-3-3-20/47

AUTHORS: Abrikosov, N. Kh. , Bankina, V. F.

TITLE: An Investigation of the Phase Diagram of the System Bi-Te (Issledovaniye diagrammy sostoyaniya sistemy Bi-Te)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr 3, pp. 659-667 (USSR)

ABSTRACT: In the investigation of the phase diagram of the system Bi-Te three intermediate phases were determined beside the compound Bi_2Te_3.
1) The α-phase with the composition $Bi_{14}Te_6$, which corresponds to the mineral chedleite. This phase forms after the peritectic reaction at 312°C.
2) The β-phase of the compound Bi_2Te. This phase forms according to the peritectic reaction at 420°C.
3.) Solid solutions with 35 - 42,5 % tellurium. This phase also forms according to the peritectic reaction at 450°C.
In alloys with 50 % tellurium an eutectic, enriched with tellurium, occurs. The solubility of Te in the compound

Card 1/2

An Investigation of the Phase Diagram of the System Bi-Te

Bi_2Te_3 is about 1 %. The solubility of Bi was not determined. The thermographic analyses were confirmed by the investigations of the microstructure. In the phase diagram of the system Bi-Te three peritectic horizontals occur, at 312°C with the compound $Bi_{14}Te_6$, at 420°C with the compound Bi_2Te and solid solutions of Te, at 540°C - domain of the solid solution with 34 - 42,5 % Te. Determinations of the electric conductivity and thermoelectric force for $Bi_{14}Te_6$ and Bi_2Te were also performed. The compound $Bi_{14}Te_6$ is characterized by minimum values of electric conductivity and a maximum electrothermal force. The compound Bi_2Te has similar values. There are 7 figures, 2 tables, and 18 references, 8 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Metallurgical Institute imeni A. A. Baykov, AS USSR)

SUBMITTED: June 25, 1957

AUTHORS: Abrikosov, N.Kh., Dyul'dina, K.A., Danilyan, T.A. SOV/78-3-7-29/44

TITLE: Investigations of the System SnTe-PbTe (Issledovaniye sistemy SnTe-PbTe)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 7, pp 1632-1636 (USSR)

ABSTRACT: The diagram of state and the thermoelectric properties of the system SnTe-PbTe, in which isomorphic compounds are formed, were investigated. In the ternary system Pb-Sn-Te continuous series of solid solutions form on the sector SnTe-PbTe. The electric conductivity and the thermoelectric conductivity of the alloys produced from SnTe and PbTe have the same type of conductivity. Modification of the properties of alloys produced from SnTe and PbTe is complicated. Alloys which are enriched with SnTe have a maximum of thermoelectric conductivity of positive value, but alloys enriched with PbTe have a thermoelectric conductivity of negative value. Electric conductivity passes through a minimum. There are 7 figures, 2 tables and 13 references.

Card 1/2

Investigations of the System SnTe-PdTe

SOV/78-3-7-29/44

SUBMITTED: June 26, 1957

1. Lead-tellerium-tin systems--Analysis 2. Lead-tellerium-tin systems--Electrical properties 3. Lead-tellerium-tin systems --Temperature factors

Card 2/2

5(2)

AUTHORS: Abrikosov, N. Kh., Vasserman, A. M., Poretskaya, L. V.

SOV/20-123-2-19/50

TITLE: Investigation of the SnTe - GeTe System (Issledovaniye sistemy SnTe - GeTe)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 279 - 281 (USSR)

ABSTRACT: In pseudo-binary systems formed by semiconductor compounds with a structure of the type NaCl, i.e. PbSe-PbTe and SnTe-PbTe, continuous solid solutions (Refs 1, 2) are formed. In the present paper a ternary system Sn-Ge-Te in the range between SnTe and GeTe was investigated. In both compounds the metal properties are stressed. The phase diagram of the system Sn-Te is known (Refs 3 - 6). The only chemical compound SnTe in the system melts with an outspoken maximum at 790°. No range of solid solutions on a SnTe basis was found. Also in the system Ge-Te (Ref 10) there is only one compound Ge-Te which melts after a peritectic reaction at 725°. The limit of the range of solid solutions on the Ge-Te basis on the tellurium side is said to be located (according to Ref 11) at the concentration of 50 atom% Te.

Investigation of the SnTe - GeTe System SOV/20-123-2-19/50

The phase diagram of the system Sn-Ge is of the eutectic type with a eutectic that is very close to that of pure tin. The melting temperature of the eutectic is 232° (Ref 12). The authors melted the metals mentioned in the title in evacuated quartz ampules and mixed them by shaking; finally they were cooled in air. The alloys were annealed at 320° for 320 hours (for the X-ray analysis at 500°). The results of the thermal analysis are given in figure 1. The liquidus- and solidus curves pass through a minimum at a concentration of about 80% GeTe and at 700°. All curves of the thermograms had a shape typical of the crystallization of solid solutions. The investigation of the microstructure of the alloys showed the formation of a continuous series of solid solutions. The X-ray analysis proved the results of either of the mentioned methods: the radiograms of annealed alloys showed a gradual transition of a face-centered cubic lattice of the compound SnTe to a face-centered rhombohedral lattice of GeTe. Table 1 gives the values of the constants of the crystal lattice of the alloys investigated. The above-mentioned investigation proved that in the system Sn-Ge-Te in the range between the two non-isostructural compounds

Card 2/3

Investigation of the SnTe - GeTe System SOV/20-123-2-19/50

SnTe and GeTe a continuous series of solid solutions with a minimum in the melting-point diagram is formed. There are 4 figures, 1 table, and 12 references, 3 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR)

PRESENTED: June 28, 1958, by I. P. Bardin, Academician

SUBMITTED: June 24, 1958

Card 3/3

VOL, Abram Yevgen'yevich; AGEYEV, N.V., red.; ABRIKOSOV, N.Kh., doktor tekhn.nauk, red.; KORNILOV, I.I., red.; SAVITSKIY, Ye.M., red.; OSIPOV, K.A., doktor tekhn.nauk, red.; GUSEVA, L.N., kand.khim. nauk, red.; MIRGALOVSKAYA, M.S., kand.khim.nauk, red.; SHKLOVSKAYA, I.Yu., red.; MURASHOVA, N.Ya., tekhn.red.

[Structure and properties of binary metal systems.] Stroenie i svoistva dvoinykh metallicheskikh sistem. Pod rukovodstvom N.V.Ageeva. Moskva, Gos.izd-vo fiziko-matem.lit-ry. Vol.1. [Physicochemical properties of elements; nitrogen, actinium, aluminum, americium, barium, beryllium, and boron systems] Fiziko-khimicheskie svoistva elementov; Sistemy azota, aktiniia, aliuminiia, ameritsiia, bariia, berilliia, bora. 1959. 755 p. (MIRA 13:3)

1. Chlen-korrespondent AN SSSR (for Ageyev).
(Metals) (Phase rule and equilibrium)

ABRIKOSOV, N. Kh.

PHASE I BOOK EXPLOITATION SOV/4966

Soveshchaniye po poluprovodnikovym materialam. Moscow, 1957

Voprosy metallurgii i fiziki poluprovodnikov; trudy 3-go soveshchaniya. (Problems in the Metallurgy and Physics of Semiconductors; Transactions of the Third Conference) Moscow, Izd-vo AN SSSR, 1959. 129 p. Errata slip inserted. 3,200 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Resp. Ed.: N. Kh. Abrikosov, Doctor of Chemical Sciences; Ed. of Publishing House: P. F. Zolotov.

PURPOSE: This collection is intended for technical and scientific personnel concerned with the investigation and production of semiconductor materials. It may also be used by students in schools of metallurgy.

COVERAGE: The collection contains reports submitted at the Third Conference on Semiconductor Materials, held at the Institute of Metallurgy imeni A. A. Baykov, AS USSR, Moscow, in May 1957. The reports deal with problems of obtaining and investigating germanium, silicon, and semiconductor compounds. The collection was first edited by D. A. Petrov, Doctor of Technical Sciences. References accompany most of the reports.

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3/30/61

DUDKIN, L.D.; ABRIKOSOV, N.Kh.

Alloying the semiconducting compound $CoSb_3$. Fiz.tver.tela 1 no.1:142-151 Ja '59. (MIRA 12:4)
(Semiconductors) (Cobalt antimonides)

5(2), 18(7) SOV/78-4-7-29/44

AUTHORS: Yelagina, Ye. I., Abrikosov, N. Kh.

TITLE: An Investigation of the Systems PbTe - Bi_2Te_3 and SnTe - Sb_2Te_3 (Issledovaniye sistem PbTe - Bi_2Te_3 i SnTe - Sb_2Te_3)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 7, pp 1638-1642 (USSR)

ABSTRACT: The present investigation was carried out with the intention of finding new semiconductors. No published data are available on the ternary system Pb - Bi - Te, the system Sn - Sb - Te has not been examined. In the alloys produced, microstructure was investigated, and the thermoelectromotive force referred to Cu at a temperature difference of 20°, as well as electric conductivity were measured. Moreover, X-ray pictures were taken. Figure 1 shows the phase diagram of the system PbTe - Bi_2Te_3, figure 2 the microstructure of the alloys, figure 4 the phase diagram of the system SnTe - Sb_2Te_3, and figure 5 the corresponding microstructures. In the first mentioned system, the primarily crystallizing phase consists of PbTe. With increasing

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Bi_2Te_3 content, the crystallization temperature drops, until, finally, at 82.7% Bi_2Te_3, a single-phase coarse-crystalline structure is formed, which corresponds to the compound $PbTe.2Bi_2Te_3$ and which is located in the phase diagram on the ordinate passing through the inflection of the solidus curve. X-ray analyses confirm the existence of the ternary intermediate phase. Table 1 gives the interplanar spacings of the crystal lattice, figure 3 and table 2 give the thermoelectromotive force and the electric conductivity of the system. At 71.8% Sb_2Te_3 the compound $SnTe.Sb_2Te_3$ is formed. Both systems belong to the same type, the thermodynamic analysis was given by I. I. Novikov (Ref 17). There are 5 figures, 3 tables, and 17 references, 8 of which are Soviet.

SUBMITTED: April 2, 1958

APPROVED FOR RELEASE: 06/05/2000 CIA-RDP86-00513R000100310001-5"

05869
5(2) SOV/78-4-11-22/50

AUTHORS: Abrikosov, N. Kh., Poretskaya, L. V., Ivanova, I. P.

TITLE: Investigation of the System Antimony - Tellurium

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 11, pp 2525 - 2530 (USSR)

ABSTRACT: The phase diagram of the system Sb - Te was investigated by various scientists several years ago. The data disagreed. Publications by N. S. Konstantinov, and V. I. Smirnov (Ref 6), S. A. Semiletov (Ref 10), and F. I. Vasenin (Ref 12) are mentioned in a short survey (Refs 1-12). The method of melt preparation is briefly described, and it is especially pointed out that the melts are equilibrated not before they have been annealed for several hours at temperatures somewhat below the solidus. Thermal analysis was made by means of N. S. Kurnakov's pyrometer; the samples were sealed in Stepanov ampules. The thermoelectric force was measured on a PPTV-1 potentiometer. Figure 1 shows the phase diagram according to data available so far in publications; figure 2 shows the diagram corrected by the authors. The solid solution of Te in Sb the α-phase, attains a maximum content of Te (1%) at 500°. The

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homogeneous range of the β-phase is found within the range 18-38% of Te. The β-phase is formed by maximum saturation with Sb due to a peritectic reaction at 550°, by a peritectic reaction at 548° on maximum saturation with Te, and at 32% of Te it passes through a minimum in the melting diagram at 538°. Melts in the homogeneous range of the β-phase exhibit a distinct polyhedral structure (Fig 3a). The γ-phase resulting from peritectic reaction at 559° is found between 42-55% of Te. The δ-phase (Sb_2Te_3) crystallizes directly out of the liquid at 616° and a Te content of 60.3%, and contains 61.1% of Te which is a little more than would correspond with the stoichiometric ratio. The positive kind of conductivity found also by other scientists is to be ascribed to this tellurium excess (Fig 5). The β-, γ-, and δ-phase were also shown by X-ray analysis (Fig 4, Table 1). There are 5 figures, 1 table, and 13 references, 6 of which are Soviet.

SUBMITTED: July 24, 1958

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5 (1, 2)

AUTHORS: Beglaryan, M. L., Abrikosov, N. Kh. SOV/20-128-2-34/59

TITLE: An Investigation of the Bi_2Se_3 - Bi_2S_3 System

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 345-347 (USSR)

ABSTRACT: Bismuth chalcogenides are semiconductors with high characteristics of the thermo- and photoelectric properties. They were investigated most thoroughly by P. P. Konorov (Ref 1). The above ternary system has hitherto not been investigated. It is interesting to investigate its phase composition, the character of phase interaction, and the change of the physical properties of the alloys depending upon the composition. The samples were produced by melting Bi, Se, and S in the necessary ratio in evacuated quartz ampules. The alloys were annealed at 600° in argon atmosphere for 3 months to establish a state of equilibrium. The phase composition was determined on the strength of the microstructure before and after annealing. This shows that 2 regions of solid solutions exist in the afore-mentioned system. The alloys between these regions of solid solutions had two phases and a eutectic type. By means of X-ray structural analysis it could be found that

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the alloys crystallize on the Bi_2Se_3 basis in a rhombohedral lattice, those of Bi_2S_3, however, in an orthorhombic lattice. Thermal analysis was made by means of the pyrometer by N. S. Kurnakov. Figure 1 shows the phase diagram of the system under discussion. Herefrom it follows that the two solid solutions form a eutectic at a concentration of 28 mol-% Bi_2S_3. The latter melts at 668°. The alloys in the region of the solid solution on the basis of Bi_2S_3 differ from those of Bi_2Se_3 in electrical conductivity. Figure 2 shows the diagram of the dependence of the natural logarithm of this conductivity on the composition. The dependence curve of the thermoelectric force on the composition of the alloys is also plotted in the latter. At a content of 66.7 mol-% Bi_2S_3 which corresponds to that of the compound $BiSeS_2$, singular points are visible on both curves. The alloy has maximum electrical conductivity compared with similar alloys. Accordingly, the thermoelectric force has a minimum of its absolute amount when approaching the composition Bi_2SeS_2. Figure 3 shows the curve of the

dependence of thermal conductivity and microhardness on the composition. Here the maxima are visible which correspond to the last-mentioned composition. V. P. Zhuze and T. A. Kontorova (Ref 6) pointed to a similar change of these two characteristics in nonmetallic melts. The formation of the compounds Bi_2Se_2S and Bi_2SeS_2 within the region of the solid solution on the basis of bismuth sulphide becomes clear when the crystalline structure of Bi_2S_3 (Fig 4, Ref 4) is considered. There are 4 figures and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences, USSR)

PRESENTED: April 8, 1959, by I. P. Bardin, Academician

SUBMITTED: April 7, 1959

~~5 (4)~~ 24.7600, 12.8100

66490

AUTHORS: Beglaryan, M. L., Abrikosov, N. Kh. SOV/20-129-1-37/64

TITLE: An Investigation of the Bi_2Te_3 - Bi_2S_3 System

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 1, pp 135-137 (USSR)

ABSTRACT: Chalcogen compounds of the elements of the 5th group of the periodic table are used in thermochemical and photoelectrical engineering. For this reason the finding out of new semiconductor substances is of practical significance. The efficiency of thermocouples is proportional to the ratio between electric conductivity and thermal conductivity of both its branches. According to A. F. Ioffe (Ref 3) the value of this ratio can be raised by using many-body systems consisting of heavy atoms. With regard to this possibility the thermoelectrical properties of the system Bi_2Te_3 - Bi_2S_3 were investigated. First, the phase diagram was examined and the diagram (Fig 1) suggested by M. Amadori (Ref 7) was corrected (Fig 2). Thermal analysis was carried out by means of the pyrometer according to N. S. Kurnakov. Bi_2Te_2S was found to be an intermediate forming a eutectic

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melting at 581° with Bi_2Te_3 and one melting at 622° with Bi_2S_3. The dependence of the electric conductivity and the thermoelectric force on the composition of the melt is shown in figure 3. In the eutectic interval Bi_2Te_3 - Bi_2Te_2S the electric conductivity decreases and the thermoelectric force increases with increasing Bi_2S_3 content up to the interval of the intermediate Bi_2Te_2S. In the eutectic interval Bi_2S_3 - Bi_2Te_2S an inverse course is observed. Measurement of microhardness (Fig 4) yielded the lowest value of hardness for Bi_2Te_2S. The lattice constants of Bi_2Te_2S, a = 10.1 Å, and α = 24°8', were obtained by means of X-ray analysis. These values are in very good agreement with the values given for the mineral tetradymite (Ref 8). There are 4 figures and 9 references, 6 of which are Soviet.

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An Investigation of the Bi_2Te_3 - Bi_2S_3 System SOV/20-129-1-37/64

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR (Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences, USSR)

PRESENTED: June 20, 1959, by I. V. Tananayev, Academician

SUBMITTED: June 20, 1959

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ABRIKOSOV, N. Kh.

PHASE I BOOK EXPLOITATION SOV/

Vsesoyuznoye soveshchaniye po splavam redkikh metallov. 1st, Moscow, 1957

Redkiye metally i splavy; trudy... (Rare Metals and Alloys; Transactions of the First All-Union Conference on Rare-Metal Alloys) Moscow, Metallurgizdat, 1960. 436 p. 3,150 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Institut metallurgii; USSR Komissiya po redkim metallam pri nauchno-tekhnicheskom komitete.

Ed.: I.K. Shapovalov; Ed. of Publishing House: O.M. Kamayeva; Tech. Ed.: P.G. Islent'yeva.

PURPOSE: This collection of articles is intended for metallurgical engineers, physicists, and workers in the machine-building and radio-engineering industries. It may also be used by students of schools of higher education.

COVERAGE: The collection contains technical papers which were presented and discussed at the First All-Union Conference on Rare-Metal Alloys, held in the Institute of Metallurgy, Academy of Sciences USSR in November 1957. Results of investigations of rare-metal alloys, titanium, and copper-base alloys with additions of rare metals are presented and discussed along with investigations of rhenium, vanadium, niobium, and their alloys. The effect of rare-earth metals on properties of magnesium alloys and steels is analyzed. The uses of rhenium as a dehydrating catalyst, electroplating material, and material suitable for making plugs for automobile electrical systems are discussed. Also, the effect of the addition of certain elements on the properties of heat-resistant steel is examined and alloys with special physical properties (particularly semiconductive alloys) are discussed. No personalities are mentioned. Soviet and non-Soviet references accompany some of the articles.

PART II. TITANIUM, AND COPPER-BASE ALLOYS WITH RARE-METAL ADDITIONS

Rare Metals (Cont.) SOV/4164

PART VI. ALLOYS WITH SPECIAL PHYSICAL PROPERTIES

PART VII. RESOLUTION

AVAILABLE: Library of Congress

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VK/wrc/sfm
10/14/60

82630
S/180/60/000/004/025/027
E193/E483

5.4210

AUTHORS: Abrikosov, N.Kh., Lyan-Tszun'-U, Shashkov, Yu.M.
(Moscow)

TITLE: On the Volatility of Boric Oxide in Helium and Hydrogen in the Presence of Water Vapour

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No.4, pp.156-159

TEXT: The rate of evaporation of boric oxide in dry and wet helium and hydrogen, at temperatures between 800 and 1400°C, was studied by the dynamic method. The results are reproduced in Fig.2 to 6. Fig.2 shows the temperature dependence of the vapour pressure p of B_2O_3. Fig.3 (plotted in the logarithmic scale) shows the decrease in weight of B_2O_3, per unit area (Δ, mg/cm^2) as a function of rate of flow of helium (V, l/h) of dry (broken curves) and wet (continuous curves) at various temperatures, the partial water vapour pressure in wet helium being P_{H_2O} = 0.0313 atmospheres. Fig.4 illustrates the same relationship for dry (curve 1) and wet (curves 2 to 5) hydrogen. In Fig.5 the degree of saturation of wet helium with HBO_2 vapour is plotted against the rate of flow of the helium-water mixture at various temperatures.
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E193/E483

On the Volatility of Boric Oxide in Helium and Hydrogen in the Presence of Water Vapour

Finally the temperature dependence of the vapour pressure of HBO_2 at $P_{H_2O} = 0.0313$ atm is shown in Fig.6. The latter relationship in the 1133 to 1637°K temperature range is described by

$$\log P_{HBO_2} = 5.043 - \frac{43.490}{4.575T} .$$

The conclusion reached was that the rate of evaporation of B_2O_3 in helium and hydrogen increases considerably in the presence of water vapour. There are 6 figures and 15 references: 1 Soviet, 11 English, 1 French and 2 German.

SUBMITTED: March 22, 1960

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86699

S/180/60/000/006/009/030
E111/E352

5.4120 2209, 1273, 1043

AUTHORS: Abrikosov, N.Kh., Lyan Tszun'-u and Shashkov, Yu.M.

TITLE: Solubility of Oxygen in Liquid Silicon

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 65 - 68

TEXT: The authors give results of their study of oxygen solubility in liquid silicon under steam-helium and steam-hydrogen mixtures and of the influence on this of acceptor impurities. A vertical zone-refining type of installation with H.F. heating was used, giving a 10 mm fused zone with the 9-mm diameter silicon specimens. Required gas compositions were produced by passing purified helium or hydrogen through saturators and were checked; gas-mixture flows were kept constant during the experiment at about 580 me/min, 15 min being allowed for attainment of equilibrium. With the hydrogen mixture solidification was made slower to avoid pore formation through hydrogen evolution. Oxygen concentration in solid silicon was determined from the absorption coefficient

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E111/E352

Solubility of Oxygen in Liquid Silicon

in the infra-red region of the spectrum at 293 ^{o}K (Refs. 2, 3). Optical measurements were made with a type ИКС-14 (IKS-14) double-beam infra-red spectrometer. Fig. 2 shows the dependence of the absorption coefficient for p-type silicon on the concentration of current carriers (determined by the Hall effect) at 293 ^{o}K (wave number 1106 cm^{-1}). Special experiments showed the oxygen distribution coefficient in the crystallized zone to be uniform. Fig. 3 (left) shows the dependence of oxygen concentration on the steam/hydrogen ratio and Fig. 3 (right) on steam partial pressure in the helium mixture: the respective solubilities are 1.69×10^{18} and 1.8×10^{18} atoms/cm^{3}, at a temperature close to the melting point, in good agreement with published data (Ref. 1). Corresponding experiments with boron-containing samples showed that this element does not effect oxygen solubility.

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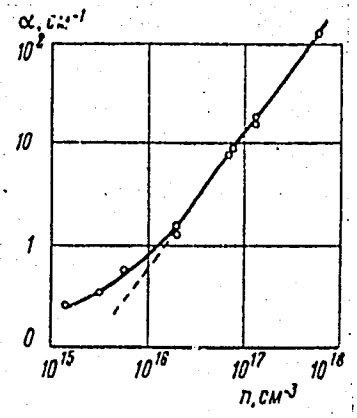
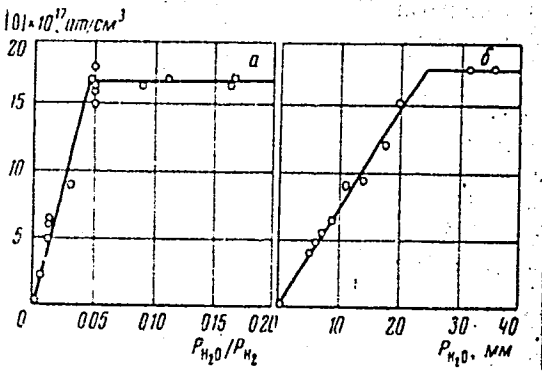
E111/E352

Solubility of Oxygen in Liquid Silicon



Фиг. 2. Зависимость коэффициента поглощения кремния *p*-типа от концентрации носителей тока при волновом числе 1106 $см^{-1}$ при 293° К



Фиг. 3. Зависимость содержания кислорода в жидком кремнии от P_{H_2O}/P_{H_2} при плавке в пароводородной смеси (*а*) и от P_{H_2O} при плавке в парогелиевой смеси (*б*)

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