



9391—80

{ **2947-81** **2952-81)**

9391-80*

(2947—81
2952—81)Sintered Hardmetals. Methods for determination
of porosity and microstructure

9391—67

1980 . 2191

19

01.01.83
01.01.88

2952—81.

2947—81

(

, . 1).

1.

1.1.

20559—75.

2.

2.1.

2.2.

2.

*

1985 . . 1982 ; 3963 1, 13.10.82 (1—83)

©

, 1985

3.

3.1.

, ,

3.2.

2.
4.

4.1.

10

100 200 .

— ,

, (. 1, 2) * .

, , , 0,02;

0,04.

4.1.1.

10 25

100 . ,

(. 1 , 5).

, 0,02, 0,06.

4.1.2.

1).

30

100 .

, (. 3).

, 0,08; 0,4.

4.1.3.

50

100 .

, D (. 4).

, $D_0,2$; $D_0,4$.

*

4.1.5.

, ,

4.1.5.1.

, 25 [

100

51—75 () , 76—100 , 80 100 . (1 2) ^ : 25—50 ,
 25 , 2 , 1 2 , 1
 4.1.6. , 50 50 100

1 2.

1 2,
1 2,

100; , 1 2. (1 2) : 51—75; 76—100 ()
 55 , 2 80
 50 3 (. 1).

4.2.
4.2.1.

100 200

— ,

1 (5, 6 , 2) 2 (. 1
 6). 1 2,

4.2.2.

*

4.2.3.

4.3.

4.3.1.

1 (.).) |)

1	20%- 18-20° , 2-3))	,
			0-	
	-18-20° ,		0-	,
			0-	,
3	20%- 18-20° , 2- 3 3-4	a- a- t)	a- 0-	[2
	J8-20° , 15-			,
1:2			0-	5

Upodommi

5	450—500^0, 15	4 5, 5	“ P.	,	

1

ft

«
»

8

1

« », « »
 3 (. 2, 3, 4).]

100), , 1500
 10 ,

4.4. (J- ()
 4.4.1. (3-

1 (.).
 1250—1500 ,

10

(3- (10 (),
 3, . 5, 6). , (3- 5

(3- .

4.5.

() a-

3 (.). 2,
 3 (. 7—10).

, 1250—1500 ,

400—500 .

4.5.2. a-

5. * 5,

4.5.3. 3 (a- 11, 12).

(. 1, 2, 3

7)

10

a-

1:100,

, 100

(. 7, 8

3);

200 — (. 9
 3) (. 3)
 3) (. 10

($\pm 0,5$).

1	0,5—1,5
2	1,5
3	2,5
4	3,5

a-

, , (. 1, 2, 3
7) , a-

(, , 1).
4.6.
4.6.1.

4,

5 (.) ,

3

(. 13, 14).

3

(, 3, . 15, 16).
1250—1500

3

4.5.3.

(. 4, 5, 6 , 7)

(, , 1).
4.7.
4.7.1.

10

4872—75 4411—79.
4.7.2.

a-

, , . 4.5.1
4.5.2. 100 200 .

a-

3 (. 17).

5.

5.1.

,

]

a-

5.2.

50 (1 2)

,

4.1.6.

1 2,

,

1 2,

,

5.3.

4.

γ -)	(, Ni) (Ti, W) ; $(Ti, W,)$
-----------------	------------------------------------

1. 1.1. 1.2. , 1.3. 1.4. 1.5. 9206—80, 1.6. 982—80) 1.7. $\frac{1}{0}$	$2^{12.}$ 3803 $0,6—0,8 / ^2 (6—8 / ^2).$ $40/28$ $14/10$ $5962—67$ $—$ $7/5$ $7/5,$ $),$ $1/0$	$()$ 3803 $40/28$ $14/10.$ 881 881 $/2,$ $,$
---	---	--

1.8.

1.9.

100

1250—1500*.

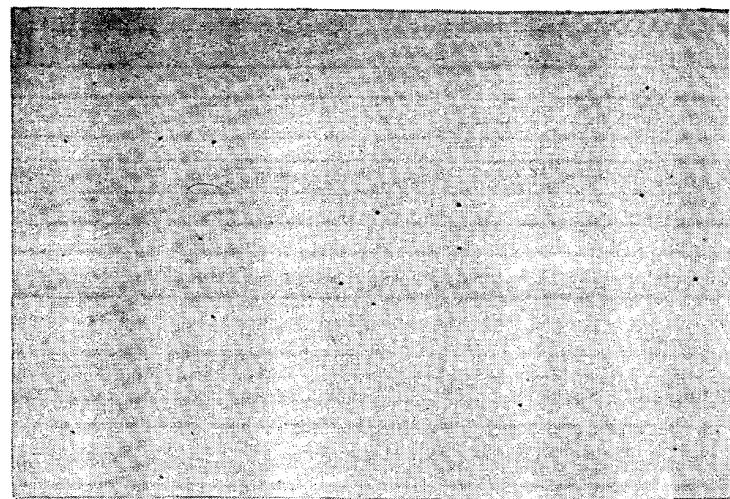
1.10. 3803
70—140 / ; 881—700 / .
1.11. - - - - -

2

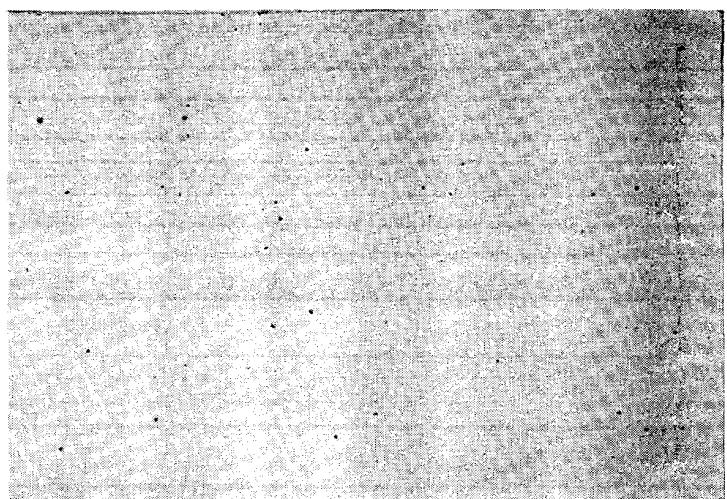
3

	1 D.E	,			“ 50 (1 2),	,
		51-75	76-100	too		
1						
2						

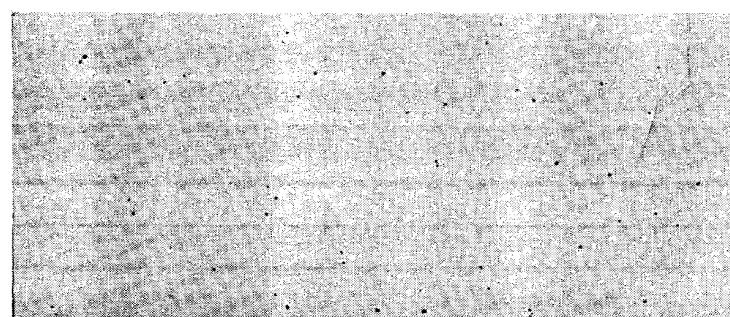
100



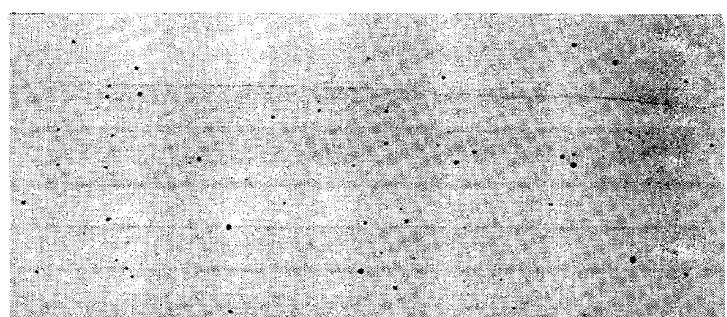
0,02%



0,04%



0,08%



0,2 %



-5

0,4 ''



-6



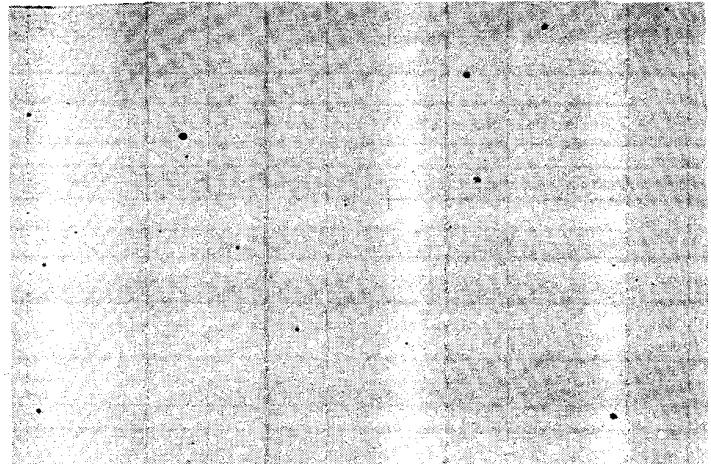
0,8%

200



-1

0,02%



- 2

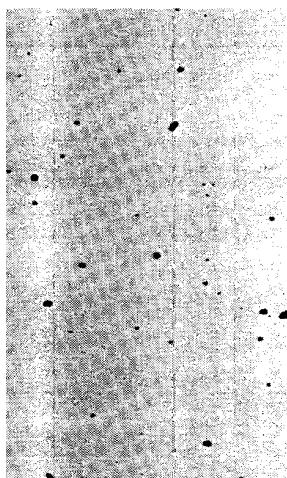
0,04%

- J

0,06%

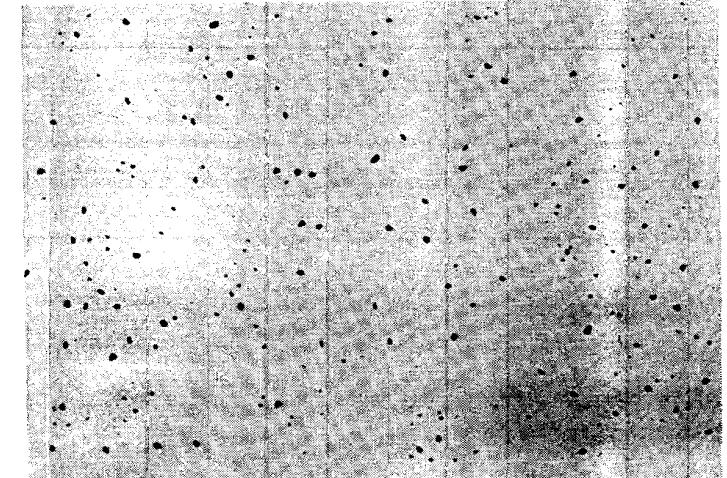
~ 0

0,2%



-5

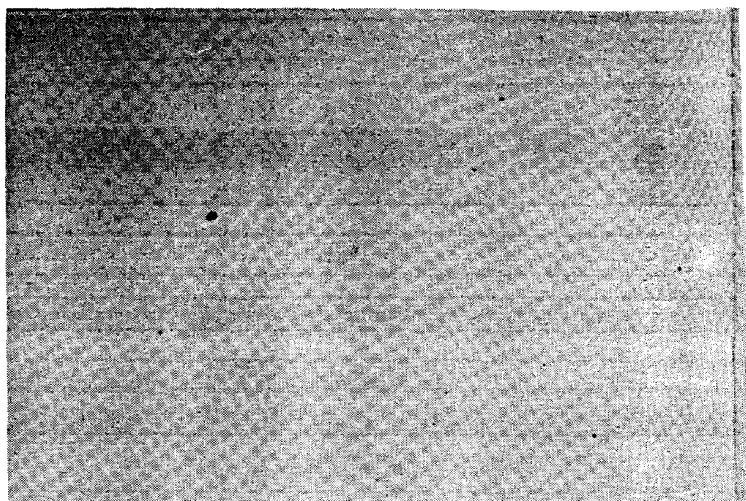
0,4%



-6

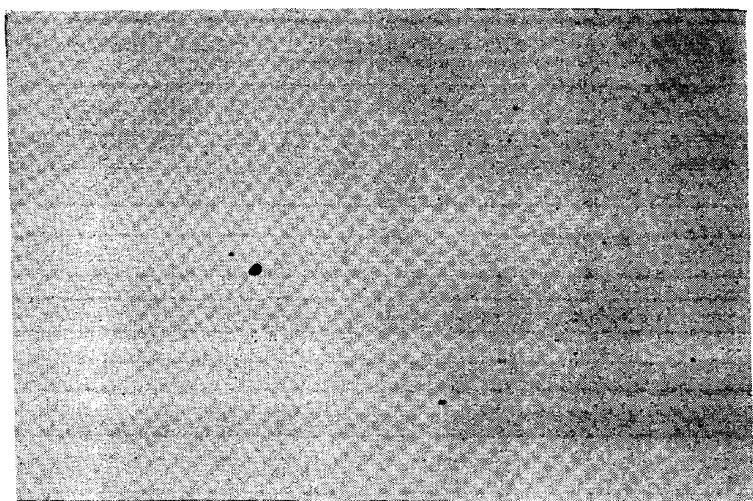
0,8 %

100



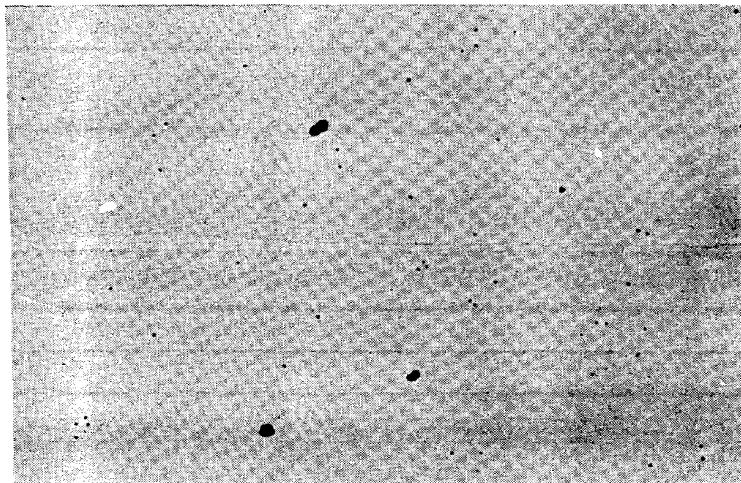
- 1

0,02%



- 2

0,00%

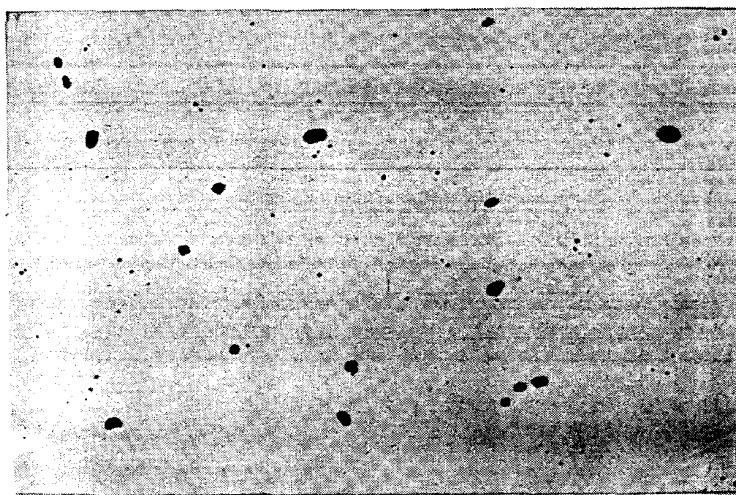


- 3

0,08%

B - 4

0,2 %



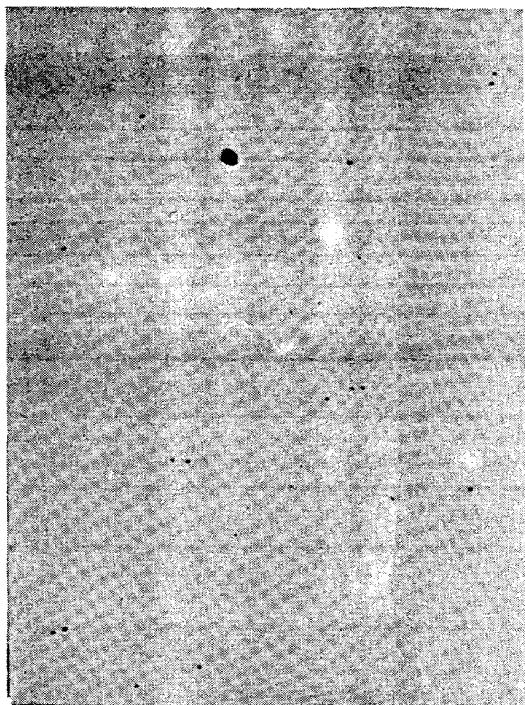
- 5

0,0%

B - 5

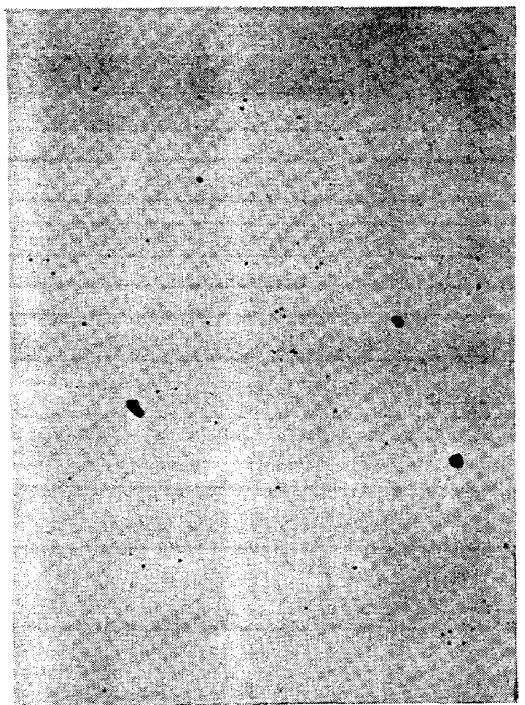
0,8 %

. 3



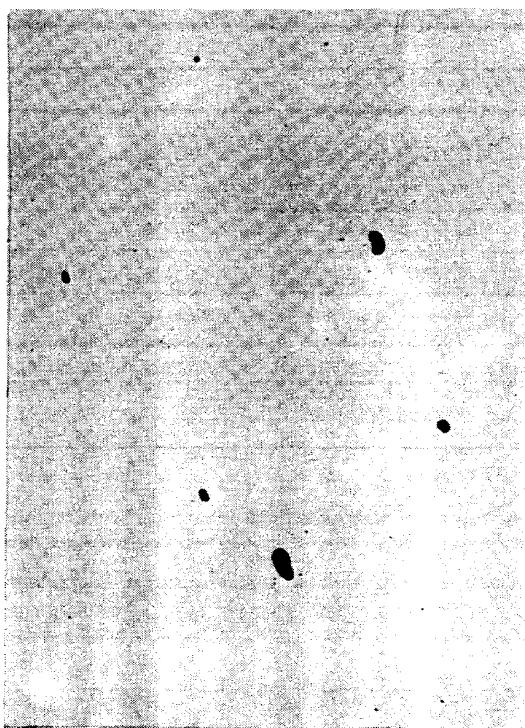
Д - 1

0,1 %



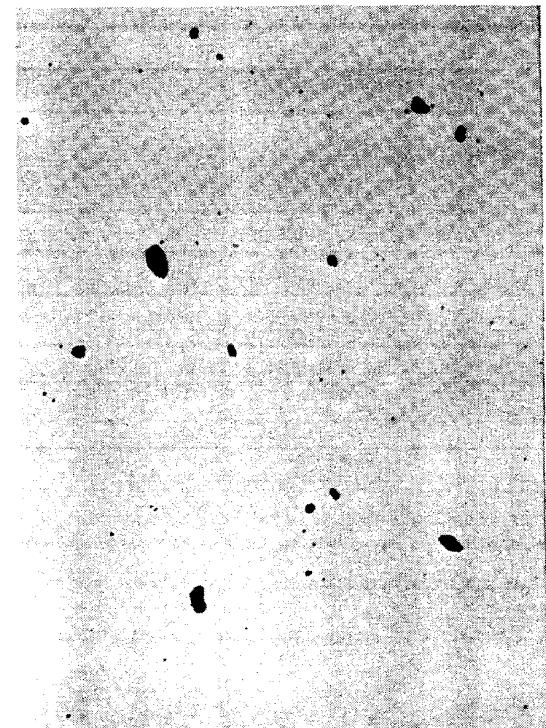
Д - 2

0,2 %



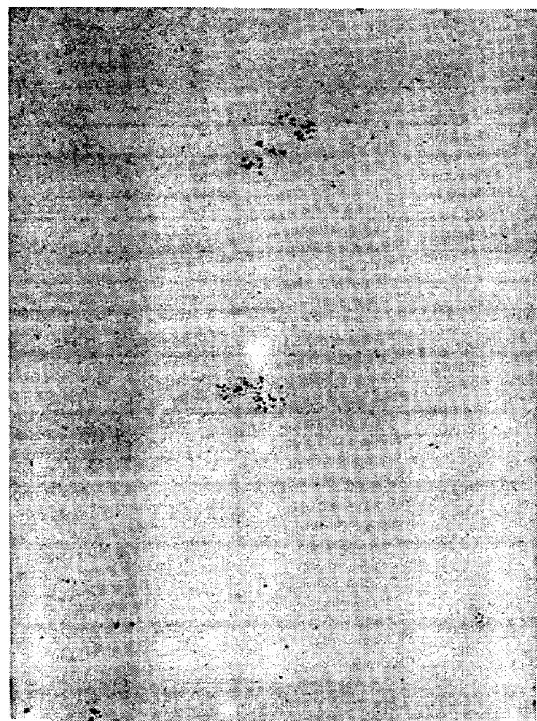
- 3

0,4 %



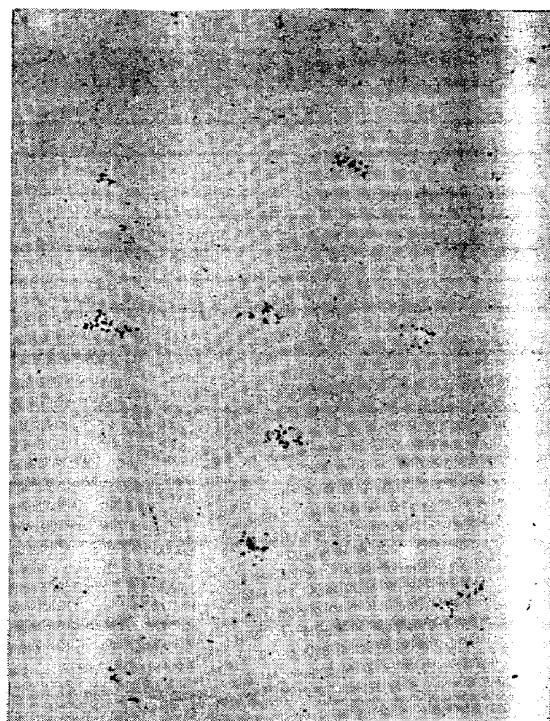
0,8 %

X100



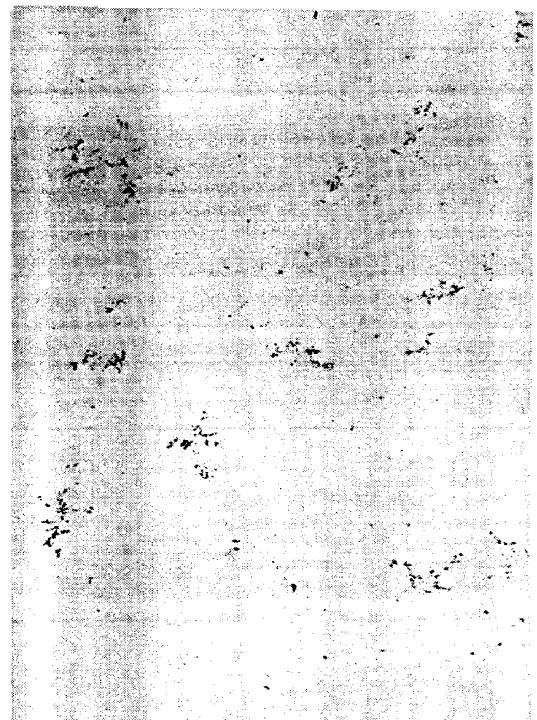
C - 1

0,1%



C - 2

0,2%

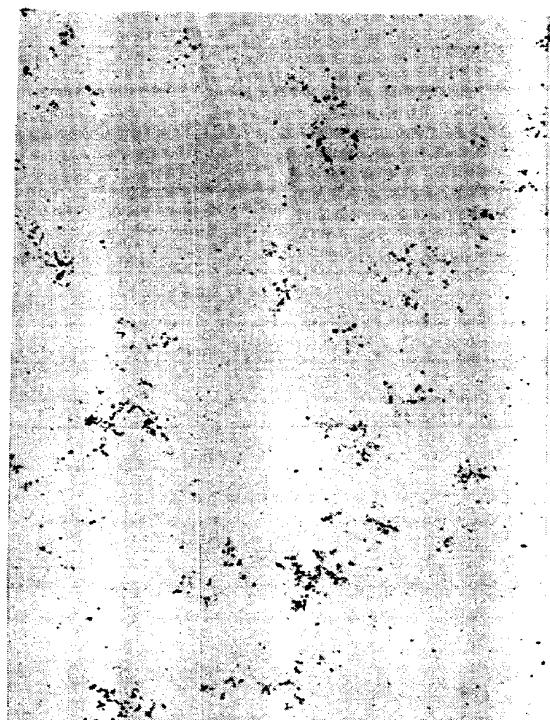


- 3

0, %>

- 4

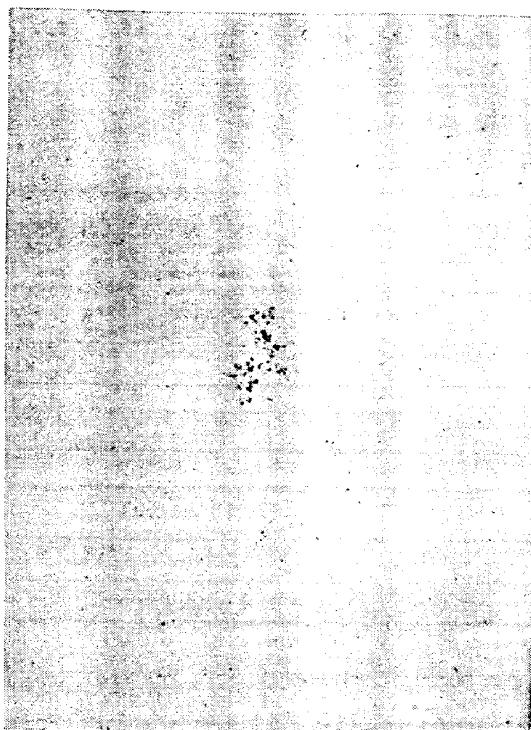
.5



0,8%

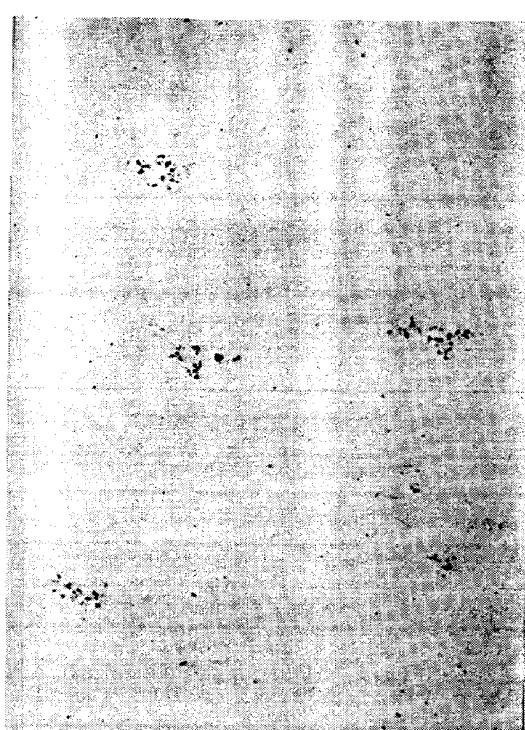
C I

X200



-1

0,1%



-2

,

•• •
• '1

" "

• Vⁱ

-V-'

•, -•

*-

!,, *-

-•

•? \$..

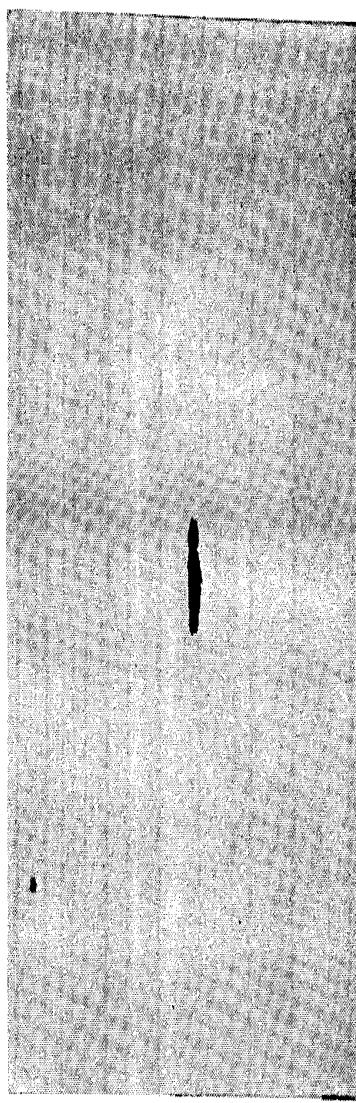
-J

0,0%

#<?%

Крупные поры

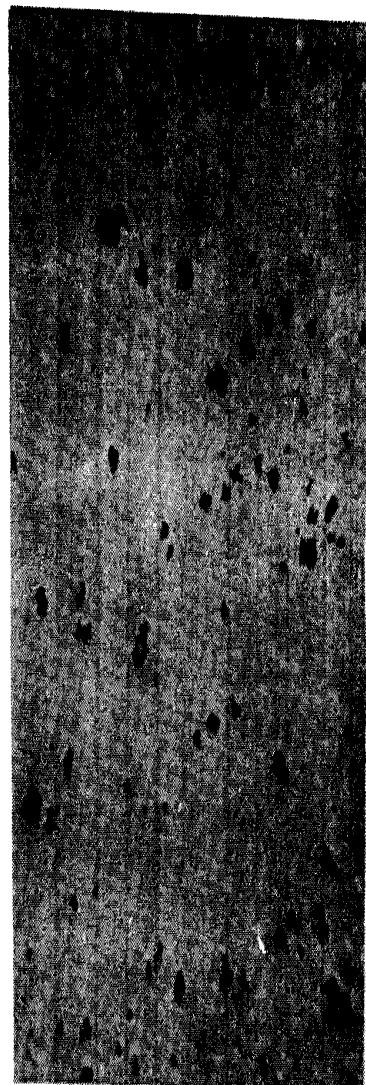
X100



Черт. 1

Фаза типа η формы «озерков»

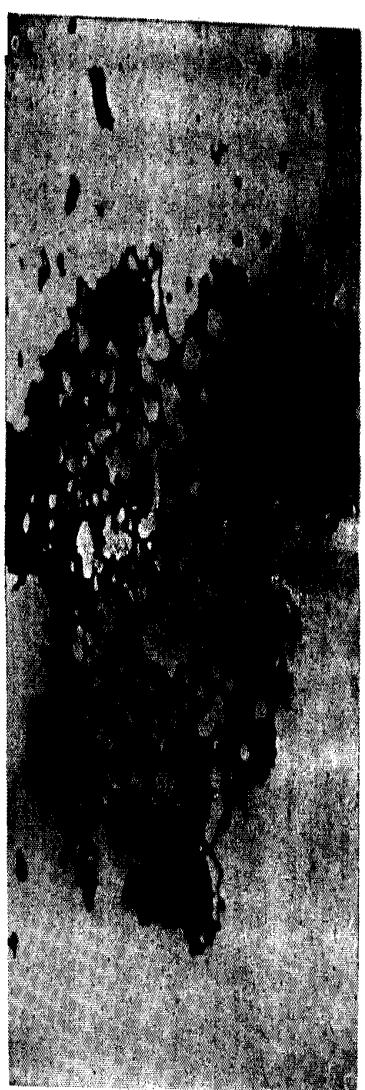
X1500



Черт. 2

Фаза типа η формы «кружев»

X1500



Черт. 3

(2 3)

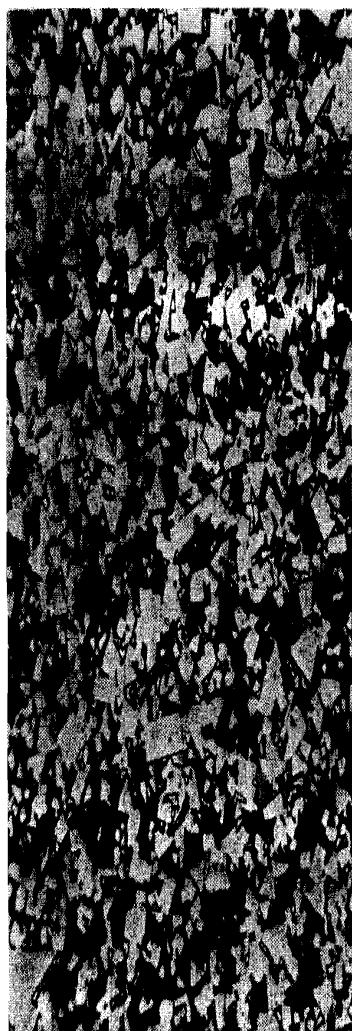
1500

X150||

5



.12



,13



.14

«кружев»

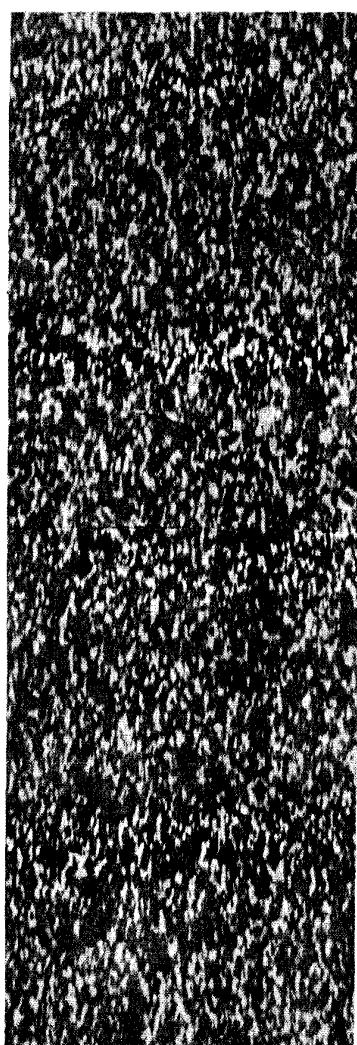
Фаза типа η по границам раздела фазРавномерное распределение β -фазыСкопление β -фазы

X1500

X1500

X1500

X1500



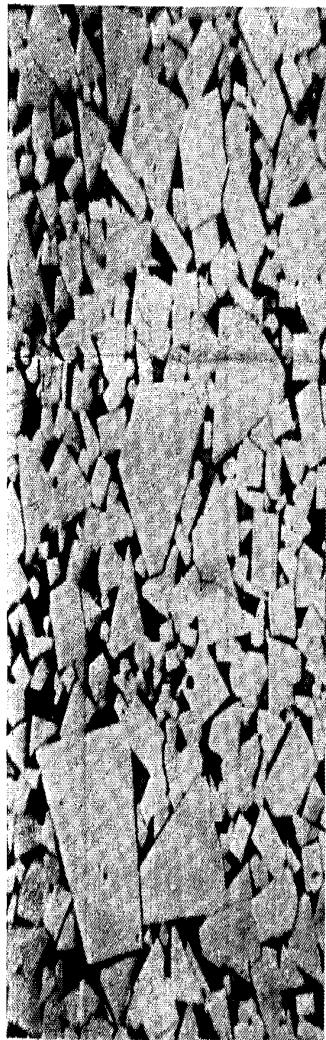
Черт. 4

Черт. 5

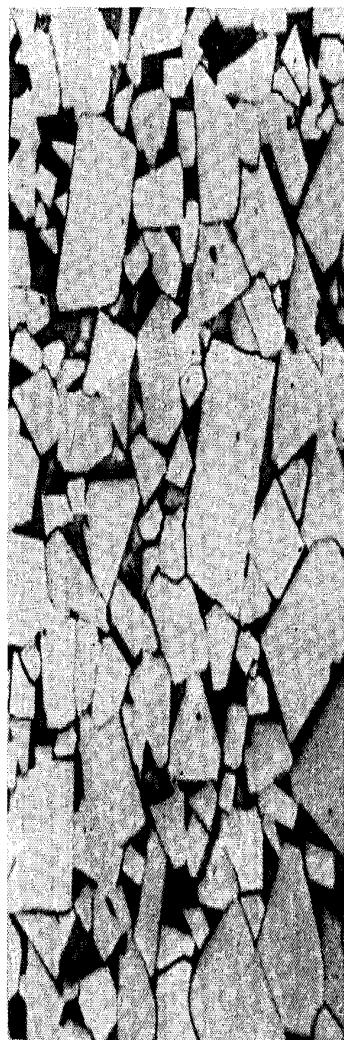
Черт. 6

«-

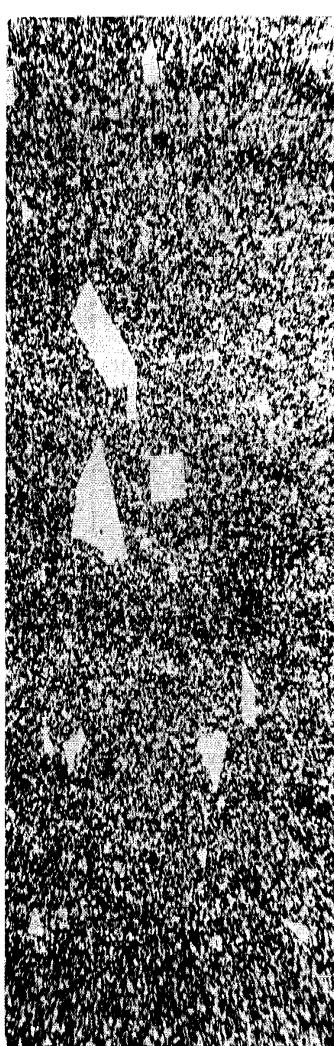
200



Черт. 9



Черт. 10

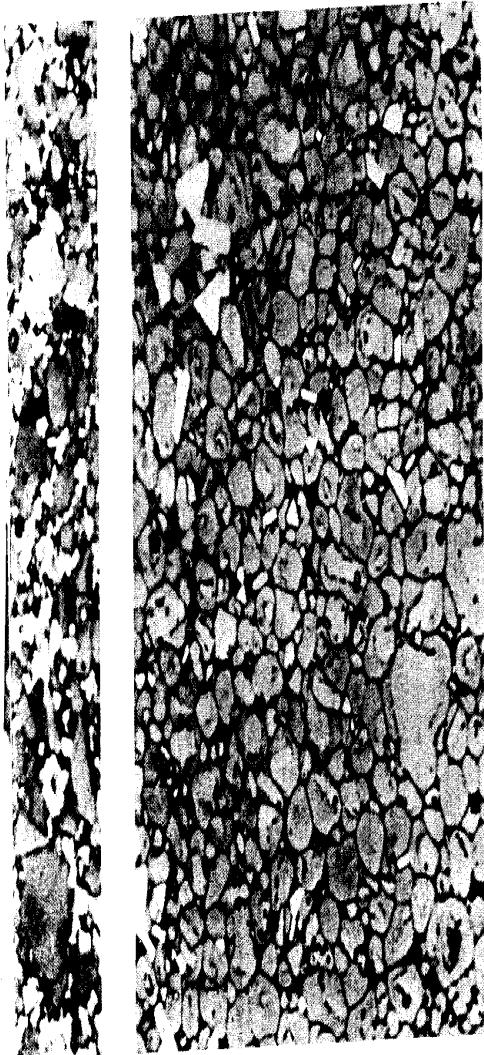


Черт. 11

зы и титано-тантало-вольфрамовые сплавы

X1500

Травление по режиму 4 и 5

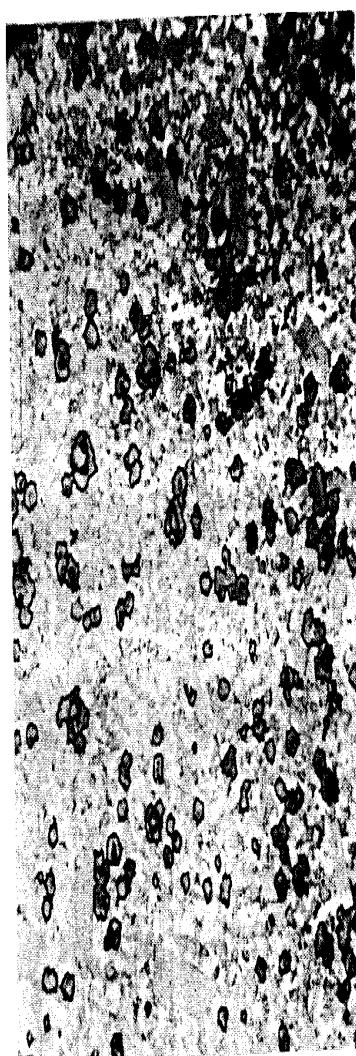


Черт. 15

Травление по режиму 3

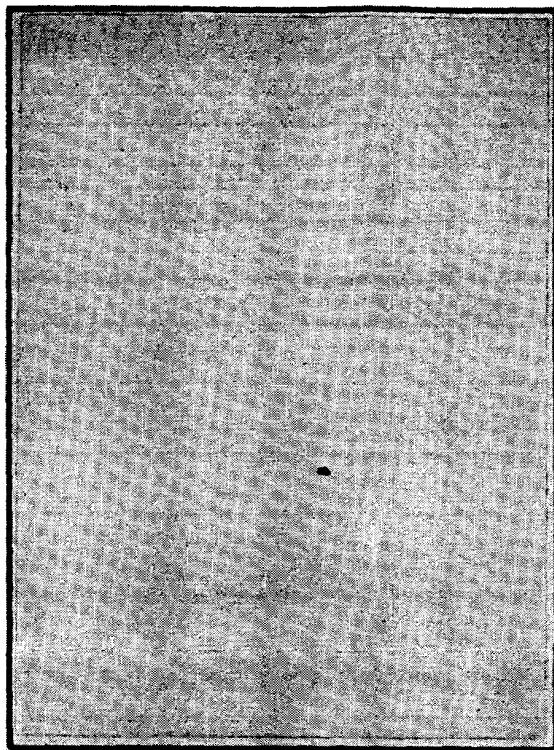


Черт. 16

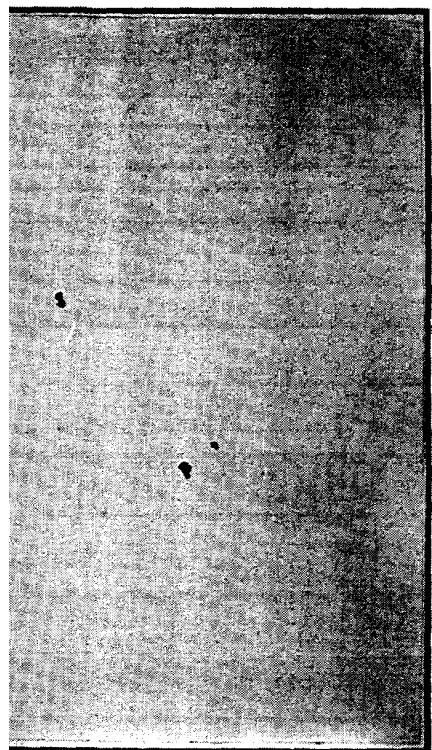


Черт. 17

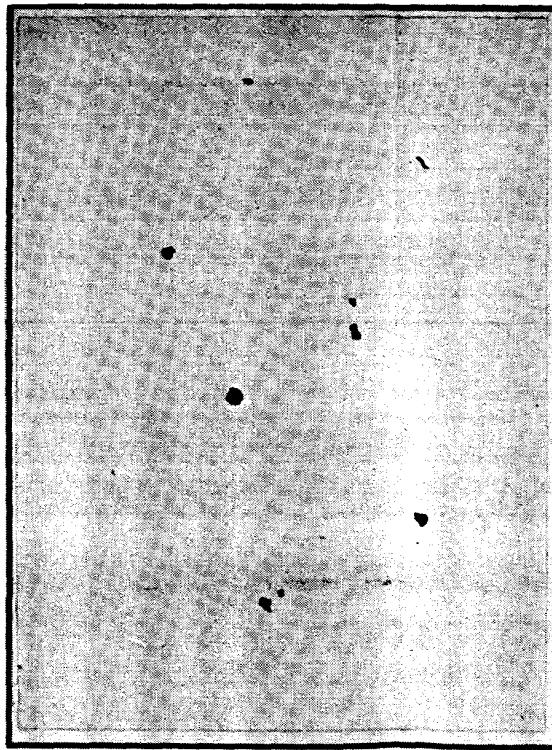
100



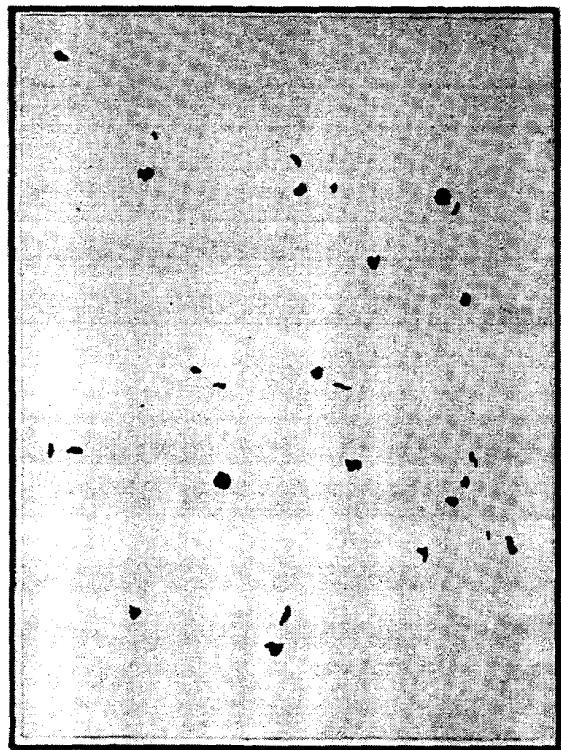
E1 (0,02 % об)
(140 пор/см²)



2 (0,06 % /)
(430 / ²)



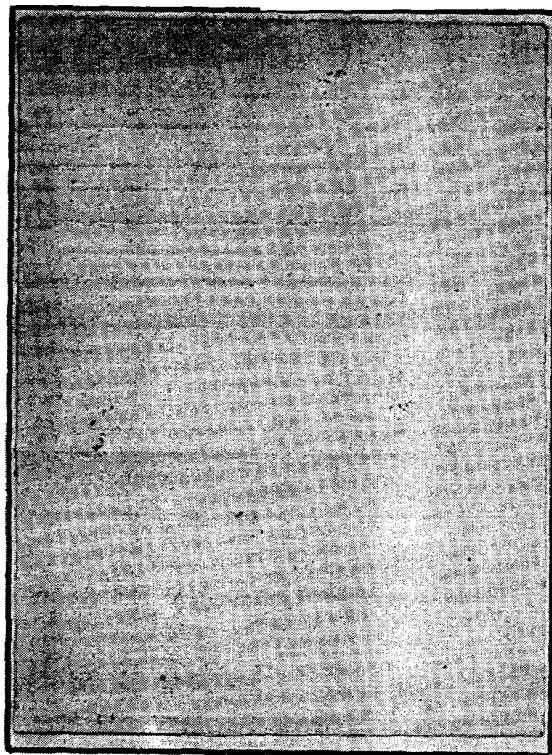
3 (0,2 % /)
(1300 / ²)



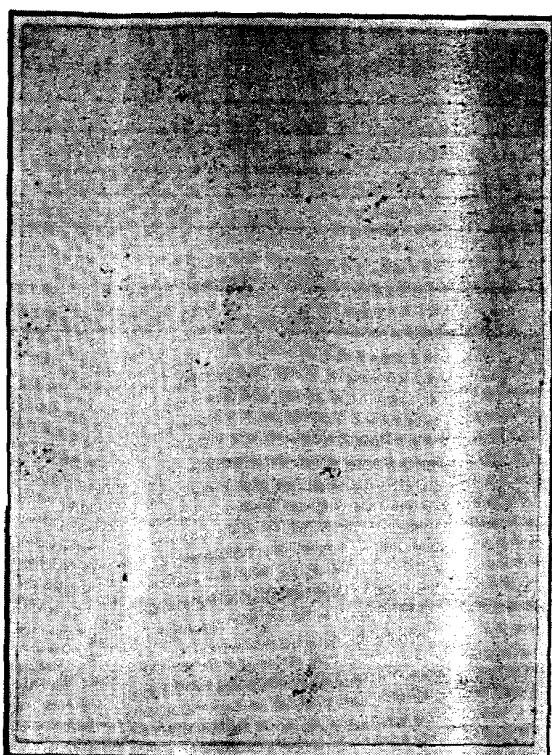
4 (0,6 % /)
(4000 / ²)

2

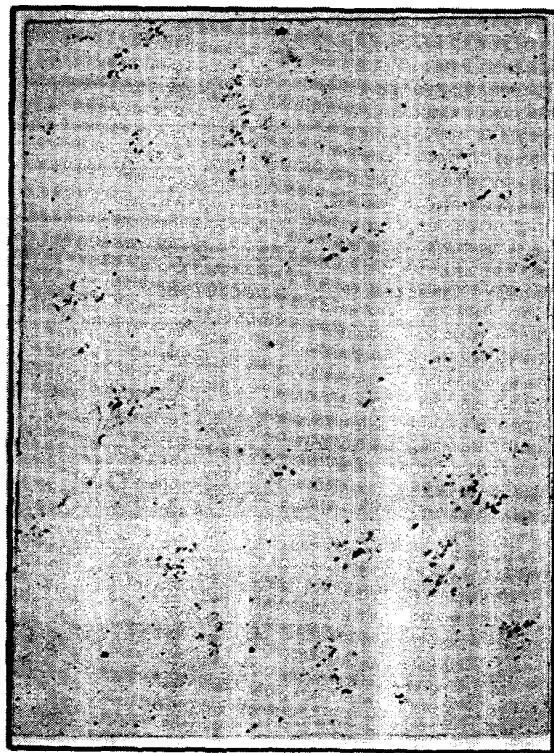
X100



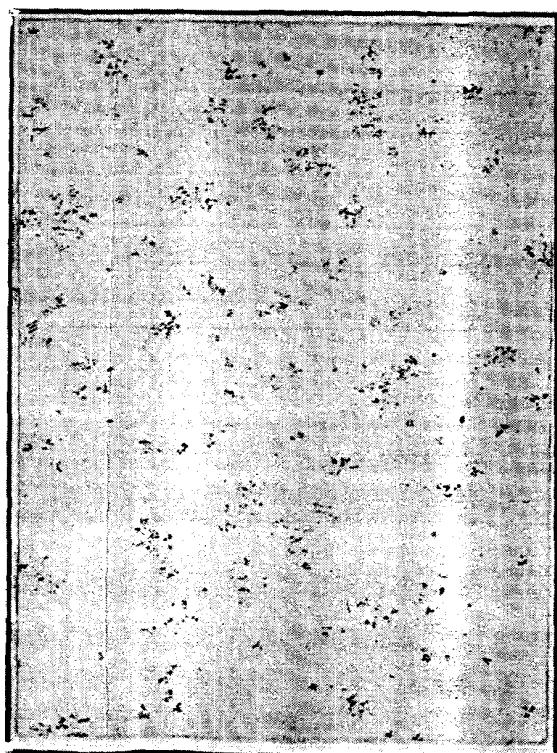
C2 1



C2 2



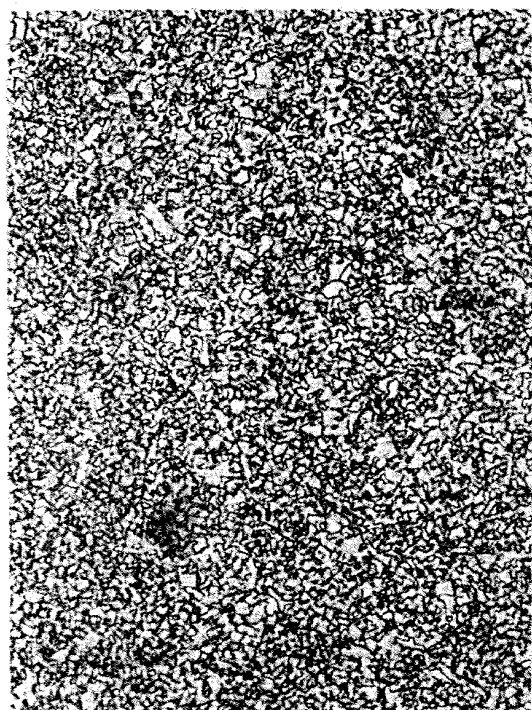
C2 3



C2 4

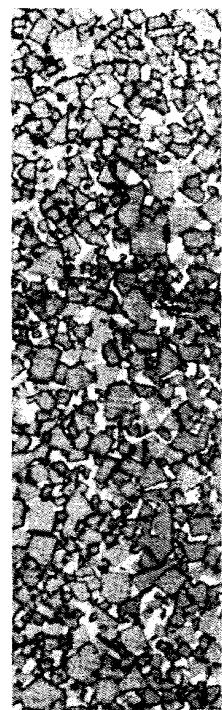
1

a-

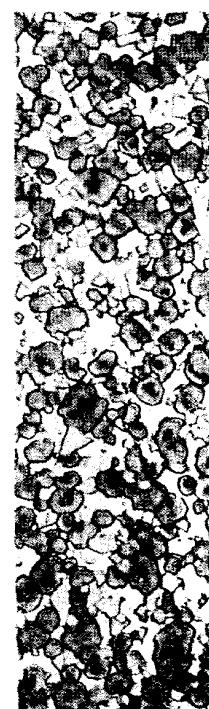
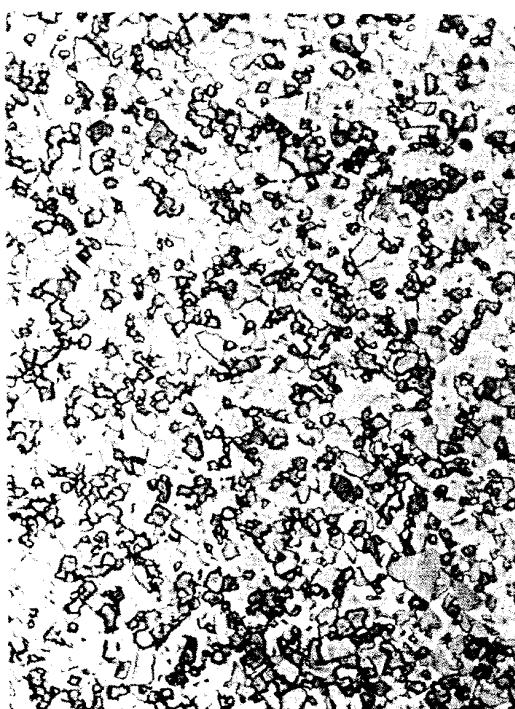


a-

<



.1



.4

1500

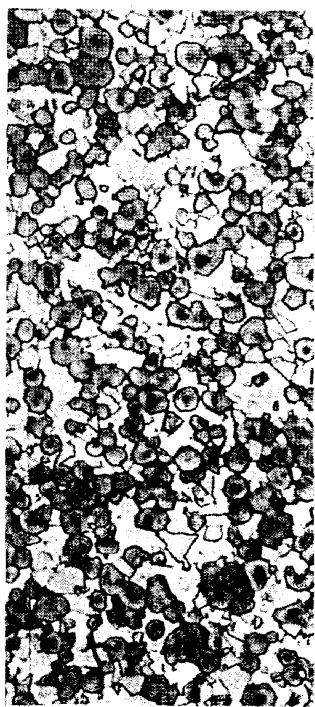
a-



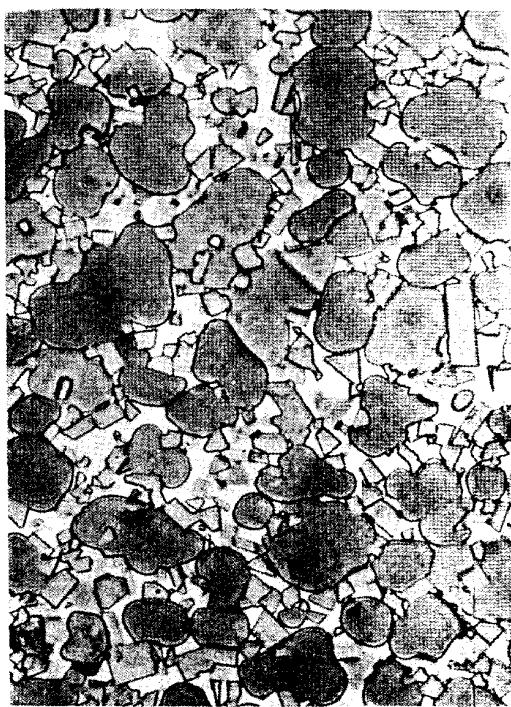
.2



.3



.5



.6

