

**Note on Ceramic Clay in the  
Damodar Valley and  
Adjacent Area**

BY

**V. R. KHEDKER**

DIRECTOR, INDIAN BUREAU OF MINES.

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# NOTE ON CERAMIC CLAY IN THE DAMODAR VALLEY AND ADJACENT AREA

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## *Raw Materials:*

Raw materials required for the manufacture of porcelain are ball clays, china clays, feldspar and quartz.

## *Ball Clays:*

These are sedimentary, plastic, refractory clays which fire white. They are used chiefly as one of the ingredients of white ware and for other purposes where a refractory clay of good bonding power is required.

This is more or less a trade name for a particular type of clay, which results from the weathering of aluminous silicates in temperate countries and are found to occur in Great Britain and may be found at similar other latitudes. On account of the tropical conditions no workable deposit of ball clay has been reported from India. However, by judicious mixing up of two or more kinds of clay a product similar in quality to the typical ball clay may be produced. Though typical ball clay is not deemed absolutely essential at present in ceramic industry, small quantities are being imported from England.

## *China Clays:*

These are plastic white firing clays which result from the weathering of pegmatite and granite. Sedimentary clays are also met with and these deposits are usually lens shaped. After washing, china clays are used largely in the manufacture of high grade products such as white earthen ware, porcelain of all kinds as well as filters for paper and rubber and other products.

## *Feldspar:*

Feldspar which is easily the commonest mineral of the crystalline rocks forms a group of minerals of which the

principal species are orthoclase, microcline, albite and anorthite. Commercial feldspars are intergrowth of at least two principal species of feldspar and are produced from pegmatites only. Feldspar, on account of its important fluxing feature, is a basic raw material for the manufacture of all burned clay products. It is also used in the manufacture of glass soaps and scouring powders and as a binder in abrasive wheels and in dental porcelain.

These items are processed through ball mills, plungers, filter press and after pugging, the final clay is used for moulding insulators, etc.

Subsequently, the insulators are glazed with a preparation of China clay, feldspar, quartz and other minerals of suitable glaze and fired in kiln to  $1250^{\circ}\text{C}^1$ .

Dense burning clays which after firing turn red brown or other dark colours, having a long vitrification range (5 cones or about  $983^{\circ}\text{C}$ ) may be used in the manufacture of electrical porcelain. It may be mentioned here that steatite (talk) because of its high electrical resistance is widely used in the manufacture of switchboards and other insulating media<sup>2</sup>.

Porcelain produced from sillimanite, kyanite, dumortierite and andalusite is valuable because of its high insulating properties when heated, high melting point, low coefficient of expansion and resistance to the corrosive action of certain fluxing agencies and furnace gases. These minerals are used in the manufacture of spark plugs and electrical porcelain<sup>3</sup>.

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<sup>1</sup> W. H. Bates, *Trans. Mines. & Geol. Inst. of India*, Vol. XXVIII (1933), pp. 136-7.

<sup>2</sup> *Industrial Minerals and Rocks*, p. 59.

<sup>3</sup> *Industrial Minerals and Rocks*, p. 59.

## LOCALITIES &amp; RESERVES.

In the area under consideration, viz, the Damodar Valley and adjacent Region, there are a large number of occurrences of clay. Some of these have been worked in the past for supplying the requirement of industry over a wide area. A list of the more promising occurrences together with the reserves in tons is given below.

## MANBHUM DISTRICT.

Name.	Location.	Sheet No.	Accessibility.	Reserves.
1. Dhatara	22°36'45": 86°43'15"	73 I/10	6 m. w. of Ramkanali R.S., B. N. R.	812,000
2. Kalajhor	23°27': 86°35'	73 I/11	12 m. from Adra, partly motorable road.	600
3. Mahatamarra	23°25': 85°55'	73 E/15	5 m. from Jhalida R.S., B. N. R., motorable road.	5,000
4. Khariduaara (Balaram- pur)	22°59': 86°38'	73 J/9	5 m. s. of Manbazar unmetal- led road. Manbazar to Purulia (B. N. R.) metalled road.	54,000
5. Dendudih	22°58'45": 86°32'45"	73 J/9	20 m. from Barabhum B. N. R. partly metalled road.	150,000
6. Sialdanga	22°57': 86°41'	73 J/9	3 m. s. of (4)	132,000
7. Rajabasa	22°49': 86°24'	73 J/5	Near (8)	1,000
8. Megdaha	22°48': 86°25'	73 J/5	20 m. from Tatanagar, 30 m. from Barabhum.	28,000

The data given above have been extracted from the unpublished Progress Report of Mr. D. R. S. Mehta. Geological Survey of India. Ceramics Raw Materials Investigation, Manbhum District, 1946-47.

## SINGHBHUM DISTRICT.

Sr. No.	Name.	Location,	Sheet No.	Accessibility.	Reserves.	Remarks. % Clay
<i>Karanjia area</i>						
					Approx. area of kaolini- sation in sq. ft.	
1.	Debrasai Mine	22°13': 85°44'	73 F/12	Near Kendposi R. S., B. N. R., and near 25th milestone on Chaibasa- Jaintgarh Rd.	60,000	30%
2.	Maharaja Kasim- bazar China Clay Mines.	22°12': 85°44'	73 F/12	Near Karanjia 7 m. from Kendposi.	2,500,000	25%
3.	Karanjia China Clay Mines.	22°12': 85°44'	73 F/12	Karanjia	1,900,000	25%
4.	Diamond China Clay Mines.	22°12': 85°44'	73 F/12	Near Karanjia	1,600,000	20%
<i>Dumria area</i>						
5.	Sahai's Mine	22°12'30": 85°47'30"	73 F/12	8-10 miles from railhead.	90,000	20%
<i>Raikhomon area</i>				About 26 miles to Kendposi R. S., B. N. R.		
6.	Jaipuria China Clay Mines Ltd.	22°08'00": 85°54'30"	73 F/16	Chota Raikho- mon 26 m. to Kendposi R. S., B. N. R.	800,000	25%
7.	Balidaskand Mine.	22°09'30": 85°56'00"	73 F/16	Balidaskand	200,000	30%
8.	A. T. Huis Mines.	22°10'30": 85°55'30"	73 F/16	Gandkida	300,000	30%
9.	Dalmia Jain's China Clay Mines.	22°10'30": 84°54'45"	73 F/16	Duhuri	250,000	10%
10.	Joldiha Mines.	22°09'30": 85°44'00"	73 F/12	Joldiha	90,000	20%
<i>Bhonda area</i>				About 13 miles from Hat Gamaria on Majhgaon Rd.		
11.	Jain China Clay Mines.	22°10'00": 85°50'00"	73 F/16	„	90,000	25%
12.	Mullick's Mines.	„	73 F/16	„	90,000	25%

## SINGHBHUM DISTRICT—(Contd.)

Sr. No.	Name	Location	Sheet No.	Accessibility	Reserves	Remarks. % Clay
13.	Mullick's Surajmal Mines (abandoned)	22°10'00": 85°50'00"	73 F/16	About 13 miles from Hat Gamaria on Majhgaon Road.	180,000	20%
14.	Telaini	,,	73 F/16	,,	22,000	25%
15.	Repal Sahu's Mines. (abandoned)	22°16'00": 85°42'30"	,,	About 5 m. from Kendposi R. S., B. N. R.	10,000	20%
	<i>Chitimiti or Guli area.</i>					Approximate area of Kaolinitisation in sq. ft.
16.	Guli Mines	22°24': 85°56':	73 F/15	16 m. S.E. Chaibasa	90,000	15%
17.	Pandrasali	22°37': 85°48'	73 F/14	Pandrasali R. S., B. N. R.	10,000	50%
18.	Gundiposi	22°29': 85°42'	73 F/11	About 13 m. from Chaibasa.	100,000	35%
19.	Chota Amda	22°44'30": 85°48'30"	73 F/14	Raj Kharsawan R. S., B. N. R.	10,000	30%
20.	Majri deposit	22°42': 85°40'	73 F/10	Near Danti	30,000	40%
21.	Matia bandi	22°33': 85°38'	73 J/10		20,000	40%
22.	Kharhi Dungri	22°32': 86°45'30"	73 J/14	Gidni R. S.	30,000	30%

## SARAIKELA DEPOSITS.

23.	Chapra	22°42'30": 86°00'30"	73 J/2		10,000	
24.	Raghunathpur	22°11'00": 85°42'00"	73 E/12		10,000	
25.	Gengeruri	22°42'00": 85°05'00"	73 J/2		10,000	
26.	Mundakati	22°42'30": 86°04'00"	73 J/2		12,000	

The data for Singhbhum and Seraikela areas given in pre-page and above have been extracted from the unpublished Progress Report of Mr. R. N. P. Arogyaswamy, Geological Survey of India, Ceramics Raw Material Investigation, 1946-47.



## RANCHI DISTRICT.\*

Name.	Location.	Sheet No.	Accessibility	Reserves.	Remarks.
1. Haridih	23°27':	73 E/14		200,000	Crude clay.
	85°47'			50,000	Washed clay.
2. Sursu	23°27':	73 E/14		50,000	Crude clay.
	85°43'			12,500	Washed clay.

BHAGALPUR DISTRICT<sup>1</sup>.

Patharghatta hill	25°20': 87°16'	72 O/7	Colgong, E.I.R.	Large	Produced pottery ware was as that of Staffordshire in 1860.
Samukhi	24°57':86°52"	72 L/13	Banka		
Letwaran.	24°39':86°51'	72 L/14	Jasidih, E.I.R.		

SANTAL PARGANA<sup>2</sup>.

Dudhan	24°18':87°24'	72 P/7	Rampurhat, E.I.R.	Large	
Karanpur	24°20':87°23'	72 P/7	"	"	
Katangi	24°27':87°23'	72 P/7	"	"	
Margal Hat	25°04':87°51'	72 O/16	Rajmahal	"	Supply to Bengal Potteries.

BIRBHUM DISTRICT<sup>3</sup>.

Muham- mad Bazar.	23°59':87°34'30"	73 M/9	Sainthia, E.I.R.	600,000 7 miles.	
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*Note:* Further investigations regarding occurrences of clay in Hazaribagh, Gaya, Santhal Parganas districts are being carried out by the Ceramics Raw Materials Party of the Geological Survey of India.

## QUALITY.

The chemical composition and physical properties of some of the above mentioned occurrences have been determined and are given below:—

\*V. R. Khedker, and C. K. R. Sastry, D. V. C. Party, Geological Survey of India. (1949-50).

<sup>1</sup> Dunn, Bihar Mineral Resources, Mem. G.S.I., Vol. LXXVIII, P. 104, 1941.

<sup>2</sup> Stuart: China Clay and Fireclay, Rec. G.S.I., Vol. XXXVIII, Pt. 2, P. 134, 1909-10.

<sup>3</sup> Mehta, D.R.S., Note on Clay Deposits near Muhammad Bazar, unpublished Report, 1946.

**MANBHUM DISTRICT**  
**CHEMICAL ANALYSES.**

Sheet No.	Name	Location	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MgO	CaO	TiO <sub>2</sub>	SO <sub>3</sub>	Loss on ignition.	Total	Remarks.
73 I/11	Kalajhor	23°27':86°35'	52.40	28.20	2.40	1.45	4.72	Trace	Trace	9.84	99.05	China Clay.
73 I/15	Mahatamarra	23°25':85°55'	55.20	25.48	6.40	1.48	Trace	5.32	0.73	10.28	99.89	,,
73 J/9	Sialdanga	22°57':86°41'	76.52	14.20	2.40	1.74	0.25	Trace	Trace	3.08	98.19	,,
73 J/5	Rajsbasa	22°49':86°24'	73.28	15.87	1.60	0.85	1.01	0.71	0.64	5.98	99.94	,,

**PHYSICAL ANALYSES.**

Sheet No.	Locality	Location	Plasticity	Fusibility at 1400°C.	Shrinkage Linear.	Colour after firing
73 I/10	Dhatara	23°36'45":86°48'15"	Medium	Does not fuse	5%	White
73 J/9	Thakur Durgri (Balarampur)		Medium	Fuses		
73 J/9	Dendudih	22°58'45":86°32'45"	Medium	Fuses		
73 J/5	Megdaha	22°48' :86°25'	Medium	Does not fuse	2½%	Gray

**SINGHBHUM DISTRICT.**  
**CHEMICAL ANALYSES OF CLAYS.<sup>1</sup>**

Sample No.	Locality	SiO <sub>2</sub> (trace)	SiO <sub>2</sub> (comb)	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	MgO	CaO	TiO <sub>2</sub>	SO <sub>2</sub>	Loss on ignition			Total	Grit	
1.	Diamond China Clay Mines, Karanjia	—	—	46.84	38.21	1.59	2.17	Trace	Trace	0.62	8.83			89.31		
2.	Maharaja Kassimbazar China Clay Mines, Karanjia Jaipuria China Clay Co., Ltd., Raikhomon	—	—	51.08	33.11	2.39	0.87	0.16	,,	0.60	11.40			99.91		
(A)	Do (Textile Qlty.)	3.27	44.36	—	33.53	1.50	1.56	0.55	0.10	—	K <sub>2</sub> O 3.70	Na <sub>2</sub> O 0.12	Und. 11.16	0.15	100.00	1.14
(B)	Do (Paper Qlty.)	2.96	44.00	—	33.44	2.14	1.87	0.50	0.12	—	2.06	0.24	12.49	0.18	100.00	1.45
(C)	Do (Rubber Qlty.)	3.40	44.10	—	34.37	2.50	0.58	0.37	0.18	—	2.66	0.10	11.55	0.19	100.00	7.93
17.	Do —	—	—	50.32	31.82	2.78	2.68	0.52	Trace	0.89	—	—	10.66	—	99.67	—
29.	Gandipusi Mines	—	—	80.84	9.81	1.59	1.75	0.11	,,	1.34	—	—	2.76	—	98.20	—
41.	Chota Amda	—	—	86.00	5.91	1.79	1.52	Trace	,,	0.62	—	—	2.82	—	98.66	—
43.	Majri	—	—	87.52	4.27	2.63	1.54	,,	,,	0.75	—	—	1.72	—	98.3	—
47.	Matiabandi	—	—	59.52	23.00	3.98	1.38	,,	1.02	0.89	—	—	9.84	—	99.63	—
51.	Daradih	—	—	67.32	22.06	1.51	1.44	,,	0.83	0.68	—	—	6.18	—	100.02	—
51a.	Pandrasali	—	—	88.64	3.62	3.98	1.09	,,	Trace	0.48	—	—	1.94	—	99.75	—
61.	Khari Dungri	—	—	52.14	29.19	2.09	1.16	,,	2.22	0.68	—	—	12.04	—	99.52	—
62.	Bend	—	—	68.36	14.00	4.77	0.43	,,	1.43	0.48	—	—	10.30	—	99.77	—

<sup>1</sup> R.N.P. Arogyaswamy: Progress Report 1946-47. Geological Survey of India.

A, B, C, — Analysed by Messrs. R. V. Briggs & Co., Calcutta—Analyses Reports kindly supplied by Manager, Jaipuria China Clay Co. Ltd., Raikhomon.

**SINGHBHUM DISTRICT.  
PHYSICAL EXAMINATION OF CLAY.**

*Method of Sampling.....'Grab'*

No.	Locality	Texture	Colour	Plasticity	%Of fine	Shrinkage Volume			Colour After firing	Thermal Test
						Linear	Room	100°C		
1.	Karanjia: Diamond China Clay Mine.	Fine not gritty.	White with minute brown specks.	Poor	54.92	10%	14.74	10.54	Grey	Does not fuse at 1400°C
8.	Karanjia: Kasimbazar Mines.	Fine No. grit, Soapy feel.	Buff to white- mottled brown.	—	76.28		7.48	17.46	—	—
9.	Karanjia: Kasimbazar Mines.	Slightly gritty both fine and coarse.	Pink, mottled red.	Medium	95.30	15%	15.53	17.46	Cream	Do
16.	Raikhomon: Jaipuria China Clay Mines Ltd.	Slightly gritty in patches.	Light buff with small patches and specks of medium brown ferruginous material.	Medium	—	2.5%			White	Do
17.	Raikhomon: Jaipuria China Clay Mines Ltd.	Very fine, no grit, smooth feel.	Milky white, no coloured specks.	High	91.8	5%	14.28	12.58	Grey	Do
29.	Gundiposi Clay Mine.	Coarse gritty sheared.	Light olive to white. Poor with small inclusions of green chloritic material.	Poor	25.05	Nil	9.29	10.09	Grey	Do
41.	Chota Amda (near Raj Kharsawan).	Medium grit.	Light buff.	Poor	53.68	Nil	7.03	10.43	Grey	Do
43.	Majri.	Fine grit comparatively hard.	White to faintly greyish.	Poor	75.97	Nil	13.38	0.75	Grey	Do
47.	Matiabandi.	Fine grained compact and shaly shows trace of bedding.	Buff with patches of brown.	—	85.15	2.5%	20.07	25.96	Grey	Do
51.	Dharadih.	Fine grained, compact and shaly shows clear bedding.	White with faint pinkish specks.	Medium	—	5%	4.30	10.54	Grey	Do
51a.	Pandrasali.	Varying from coarse gritty to fine sheared.	White with faint pinkish specks.	Poor	36.8	Nil	12.58	11.67	White	Do
60.	Khari Dungri (South).	Fine; soapy touch; compact breaks with conchoidal fracture.	Pinkish with fine reddish stringers. which enlarge into bluish patches.	Medium	82.01	1.5%	13.15	15.87	Grey	Does not fuse.
61.	Khari Dungri (North).	Fine; shaly and compact; breaks with hackly fracture.	Faint bluish white; uniform.	High	—	10%	—	—	Grey	Do
62.	Bend.	Fine; slightly gritty.	Greenish black.	High	78.47	Nil	28.59	29.48	Smoky grey	Do

**SERAIKELA**  
**CHEMICAL ANALYSES OF CLAYS.<sup>1</sup>**

No.	Locality	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	SO <sub>3</sub>	Loss on ignition.	Total
1.	Chapra	80.50	10.78	1.20	—	traces	traces	2.12	2.12	—	2.38	99.46
2.	Kulidihi	77.88	11.74	1.50	—	0.25	0.06	4.82	0.68	—	3.39	
3.	Kuludihia	78.18	13.40	0.80	—	2.06	traces	1.65 (by difference)	—	—	3.85	99.60
4.	Ghagi	77.80	15.3	1.90	—	1.40	traces	0.80 (by difference)	—	—	2.80	100.00
5.	Rangamatia	88.42	7.44	0.70	—	0.60	traces	1.47 (by difference)	—	—	1.37	100.00
6.	Chapra	68.24	13.69	5.97	0.94	traces	0.69	—	—	0.27	0.50	99.30

<sup>1</sup> R. N. P. Arogyaswamy: Progress Report, 1946-47, Geological Survey of India.

*Note:* (1) Nos. 1 to 5 analysed by C. P. Misra, Ceramic Dept., Benares Hindu University—  
Kindly supplied by the Mining Department, Seraikela State.

(2) No. 6. Analysed in the Chemical Laboratory of the Geological Survey of India.

**SERAIKELA.<sup>1</sup>**  
**PHYSICAL TESTS OF CLAYS.**

	<i>Chupra</i>	<i>Kuludihi</i>	<i>Kuludihia</i>	<i>Chagi</i>	<i>Rangamatia</i>
<b>I. Contraction:—</b>					
(a) Drying Shrinkage at 110°C	1	0.5	0.5	0.5	0.3
(b) Fine Shrinkage at 1000°C	1.5	1.0	1.5	1.0	0.5
(c) Fine Shrinkage at 1100°C	2.0	2.0	1.75	1.75	—
(d) Fine Shrinkage at 1160°C	7.25	6.5	8.0	8.0	8.0
(e) Fine Shrinkage at 1300°C	9.50	9.5	12.5	11.0	11.0
<b>II. Porosity:—</b>					
(a) Porosity at 1000°C	37.5	45.6	46.73	44.8	44.63
(b) Porosity at 1100°C	34.9	35.75	41.43	42.3	—
(c) Porosity at 1160°C	16.1	15.75	27.8	32.5	30.60
<b>III. Tensile Strength:—</b>					
Of Samples dried at 110°C (lbs/sq. in)	0.87	0.213	0.12	0.45	0.02
<b>IV. Fine Tests:—</b>					
(a) Condition in raw state — (1) colour	pinkish	white	yellowish pink	white	white
(b) Condition after being fired at 1000°C — (i) Colour	buff slightly pinkish	—	—	Buff	white
(b) Condition after being fired at 1000°C — (ii) State	Inc. fusion begins	—	—	—	—
(c) Condition after firing at 1100°C — (i) Colour	buff	white	Light Pink	clinker	white
(c) Condition after firing at 1100°C — (ii) State	clinker formed	clinker begins to form	—	formed	—
(d) Condition after firing at 1160°C — (i) Colour	Light buff	white fusion begins	Light pink Softening begins	Light buff clinker formed	white clinker begins to form
(d) Condition after firing at 1160°C — (ii) State	Clinkered	—	—	—	—
(e) Condition after firing at 1300°C — (i) Colour	Dry white	white clinker formed	white fusion begins	Yellowish-white	White clinker formed.
(e) Condition after firing at 1300°C — (ii) State	Clinkered	—	—	Clinkered	—
<b>V. P. C. E. Test:—</b>					
Fusion point — — — — — between	1500°C 1600°C	1600°C 1600°C	1500°C 1600°C	1500°C 1600°C	1600°C-1700°C
<b>VI. Microscopic Examination</b> — — — — —	Contain very high% of free quartz	High % of free quartz	High% of free quartz	High% of free quartz	Very high % of free quartz.

Note: Physical tests carried out by Mr. C. P. Misra, the Ceramic Deptt., Benares Hindu University.  
Results kindly supplied by the Mining Department, Seraikela State.

## BHAGALPUR DISTRICT.<sup>1</sup>

Name.	Location.	Sheet.	Chemical Analysis								Total
			SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	FeO <sub>2</sub> Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	MgO	CaO	Na <sub>2</sub> O K <sub>2</sub> O	H <sub>2</sub> O	
Patharghatta hill	25°20' : 87°16'	72 O/7	57.00	39.11	Trace	—	1.21	1.42	1.26	14.0	114.00
Patharghatta hill	25°20' : 87°16'	72 O/7	55.00	40.38	Trace	—	1.32	2.20	1.00	10.0	110.00

These figures are of ignited clay. The loss by ignition was recorded separately.

## BIRBHUM DISTRICT.<sup>2</sup>

Name.	Location.	Sheet.	Chemical Analysis								Total
			SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	TiO <sub>2</sub>	CaO	MgO	SO <sub>3</sub>	Loss	
Muhmad Bazar	23°59' : 87°34'30"	73 M/9	42.98	37.08	2.41	2.19	0.18	0.02	0.05	14.31	98.25

<sup>1</sup> Dunn, Mem. G.S.I., Vol. LXXVIII, p. 103.

<sup>2</sup> Mehta D.R.S., Note on Clay Deposits near Mahmud Bazar 1946.

## PRODUCTION<sup>1</sup>

The production of china clay in the Damodar Valley and adjacent region from 1942 to 1946 has been as follows:

DISTRICTS.	1942.		1943.		1944.		1945.		1946.	
	Quantity (tons)	Value Rs.	Quantity (tons)	Value Rs.	Quantity (tons)	Value Rs.	Quantity (tons)	Value Rs.	Quantity (tons)	Value Rs.
Bhagalpur	570	10,711	856	25,008	855	37,318	282	19,134	120	4,320
Santal Parganas	63	358	—	—	—	—	—	—	613	39,845
Singhbhum	29,868	10,53,926	24,304	7,50,971	22,991	7,70,559	?	?	18,538	5,83,424
Manbhum	—	—	—	—	—	—	100	1,400	—	—
<b>TOTAL</b>	<b>30,501</b>	<b>10,64,995</b>	<b>25,162</b>	<b>1,75,979</b>	<b>23,846</b>	<b>8,07,877</b>	<b>382</b>	<b>20,534</b>	<b>19,271</b>	<b>6,27,589</b>

<sup>1</sup> Compiled by Statistical Section, Geological Survey of India Office.



## PROSPECTS AND POTENTIALITIES.

The China or Cermic clay deposits in the Damodar Valley and adjacent region are thus seen to be situated roughly in three groups: Singhbhum, Manbhum and Santal Parganas. A few are scattered over the remaining areas. In most cases they are 3 to 25 miles from the railway line and connected thereto by indifferent roads. The reserve collectively is large enough for the requirements of industry and would appear sufficient to sustain a major plant scientifically located and designed for a production capacity in accordance with the requirements of commerce spread over a reasonable period of time, together with room for expansion of production when necessary.

It is perhaps needless to mention that manufacture of electrical porcelain insulators would be one of the items produced in the ceramic plant. The other items being drainage pipes, acid resisting wares, sanitary porcelain, crockery, etc. etc. Provision may also have to be made for manufacture of steatite insulators which would also be required in the electrification project.

From the statistics of clay given, it is evident that Singhbhum is the largest producer of China clay so far. These occurrences are situated from 5 to 25 miles from the Kendposi R.S., on the Rajkharsawan—Gua line of the B. N. Rly. They are connected to Kendposi by indifferent roads usable during fair weather. The absence of electric power, communications and perennial water stream are factors which stand against the location of a ceramic plant in this area, at least in the immediate future.

The occurrence in the Manbhum and Santal Pargana groups have very nearly the same disadvantages as those outlined above.

Although the survey of this region for ceramic raw materials is far from being complete, the information so far available as stated above and indicated on the accompanying map, indicates that there is no single deposit with an outstandingly large reserve of good quality china clay as would turn the balance in favour of locating the plant in its immediate vicinity, inspite of other handicaps.

The distribution and potentiality of ceramic raw materials, such as china clay, other clay, felspar, quartz and minor minerals (sillimanite, kyanite, steatite etc.) in the Damodar Valley and adjacent region do not appear to have any decisive influence on the location of the ceramic plant. It would be more economical and more efficient to bring these and the clay to the plant, than to treat the clays at a number of different places. The set-up of the raw materials thus resolves into a pattern in which china clay and other materials from various suitable quarries is transported to a main washing, levigation etc. unit, adjoining the ceramic plant. The exact location of the latter may be decided after consideration of the major factors of power, fuel, water-supply, labour, communication and the general distribution of other important plants in the Damodar Valley Corporation.

In this connection it may be noted that details of deposits in the remaining areas of the Damodar Valley region will be available when the work of the Geological Division, D.V.C. and the D.V.C. Party of the Geological Survey of India, which has been operating since 1947, has been completed.



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1	2	3	4	5
41.	Shri Ranjeet Lal Nalwaya Udaipur.	Soapstone	Prospecting license	N.Nather Kipal.
42.	Shri Akbar Ali Mohamed, Udaipur.	-do-	-do-	N.Jawas.
43.	Shri Shyam Investment Corp. Jaipur.	-do-	-do-	N.Bassi.
44.	Shri Ranjeet Lal Nalwaya Udaipur.	-do-	-do-	N.Bhungapat & Sala.
45.	M/s Rati Lal & Co. Bombay.	-do-	-do-	N.Bend.
46.	M/s Mayurbhanj Mineral Syndicate (P) Ltd., Jaipur	-do-	-do-	N.Geejgarh.
47.	Shri Anand Singh Kachhawa, Fort Road Jodhpur	-do-	-do-	N.Khawa.
48.	M/s Sundhine Investment Co. Jaipur.	-do-	-do-	N.Thali.

## Appendix—II.

A statement giving production of ceramic minerals  
(1954-1958)

Production in tons.

S.No.	Year	Soapstone	Kya-nite.	Bentonite	Felspar.	Quartz	White Clay.	Bar-ytes.
1.	1954	31,177	..	119	..	..	..	509
2.	1955	33,380	..	595	..	..	..	12
3.	1956	37,185	184	300	..	..	..	205
4.	1957	36,228	462	2031	6076	2855	206	1109
5.	1958	42,225	..	3224	7367	4088	1251	1805

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