

MINERALS OF UTTAR PRADESH A DISTRICT-WISE COMPILATION

Compiled by

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District	Tehsil	Mineral	Remarks on availability and uses
1. Meerut Division			
1. DEHRADUN	Dehradun	Barytes	Occurrence of barytes has been reported from a number of localities along the belt from south east of Maldeota to Rishikesh. Preliminary geological investigations by The Directorate have revealed that the best area of mineralization is near Maldeota where a number of veinlets have been found. The best vein is 0.8 meters thick and extends over an area of 250 sq. meters.
		Dolomite	Large reserves of dolomite are reported from Baldi and Bandal river valleys and Ghoran hill. The mineral has an average chemical composition of MgO 21%, CaO 31%, SiO ₂ 1% and L.O.I. 46% and is suitable for use as flux in the steel industry. A refractory industry based on these deposits and the deposits of adjoining Tehri Garhwal district could also be considered. Small parts of the deposit are being quarried by private parties.
		Gypsum	Substantial reserves available in the Baldi river valley are being exploited for use in the Plaster of Paris industry etc. Reserves are not enough to support any large industry using gypsum exclusively, however, these deposits considered alongwith the deposits of district Tehri Garhwal and Garhwal may meet the requirements of one or two cement factories.
		Limestone	Large reserves suitable for cement sugar, paper and chemical industries are available from (1) Mandarsu area (2) Barkot Kalban area and (3) Banog-Cloud-End-Hathipaon-Bhatta Sahasradhara areas. The areas of (2) and (3) belts are being exploited by private parties. A plant for manufacturing calcium carbide and precipitated calcium carbonate based on Hathipaon-Iambidhar deposits (which have been reserved by the Govt.) is being considered in joint sector. The deposit of area (1) has been investigated in detail by the State Directorate. A reserve of over 40 million ton of cement grade limestone with an average chemical composition of CaO 45% MgO below 0.5%, SiO ₂ 8%, LOI 38% has been proved. The deposit is being considered by Cement Corporation of India for establishing a cement plant.

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			Large quantities of inferior grade limestone available from the above area and collected by picking from the river beds of Bhitarli, Kiarkuli, Baldi and Mun rivers are used for burning lime for constructional purposes.
		Marble	Substantial reserves of pure white marble suitable for making chips are available in the Cloud-End-Hathipaon, Bhitarli-Bhatta areas of the Tehsil. Due to fragmentary nature of the marble it is unsuitable for making slabs or statues. The deposits are being exploited by private parties for marble-chips, powder and poultry grit industry. Due to its pure nature CaO, 55% MgO below 1.6% SiO ₂ 0.3% the greyish-white variety is sent for use in chemical industries.
		Phospho-rite.	Substantial reserves are likely to be proved by the Geological Survey of India in the Mussoorie, Masrana and Maldeota area of the district Dehradun. The ore is reported to be of low to medium grade with P ₂ O ₅ 20% and a reserve of over 10 million tons has been estimated. The possibility of setting a fertilizer factory based on these deposits is being explored by the Fertilizer Corporation of India.
		Ordinary Sand, Bajri Shingle, Boulder & other building material.	Large quantities are available from the river beds. The accessible areas are being exploited by private parties for use of the material for constructional purposes.
	Chakrata	Limestone	Large reserves of cement grade limestone are available in the Tons, Amlawa and Yamuna Valley areas near Dhaira, Kalsi, Bias and Lohari villages. Large scale exploitation of these deposits may affect the safety of the P.W.D. roads in the Amlawa and Yamuna valleys. Substantial reserves of limestone and dolomite of unknown grade are also available near Deoban, north and north-east of Chakrata.
2. SAHARANPUR	Saharan-pure and Roorkee	Building stone, Boulders, Ord. Sand, Kankar & brick earth.	Sporadic deposits are available and are exploited from time to time for use as constructional material. Regular quarries are now in operation under Rules and brick earth.
	Deeban & Nakur	Ordinary Sand.	
3. MUZAFFAR NAGAR.	Muzaffar Nagar & Jansath	Reh, Ordinary sand brick earth.	Significant quantities are available and regular extraction of ordinary sand is in progress, under Rules.

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	Budhana & Kairana	Kankar, reh, ord. sand & brick earth	
4. MEERUT	All the Tehsils	Kankar, ord. sand, reh & brick earth.	Significant quantities are available. Areas of ordinary Sand have been let out under Rules.
5. BULAND-SHAHAR	All the Tehsils	Kankar ord. sand & brick-earth	Significant quantities are available. Areas of ordinary Sand have been let out under Rules.

II. Agra Division

6. ALIGARH	All the Tehsils	Ord. Sand Kankar, reh saltpetre and brick earth	Significant quantities are available and areas except Reh, are being worked under Rules.
7. MATHURA	-do-	Kankar, Buildings to be Saltpre reh and ord. sand & brick earth	Kankar, building stone, ordinary sand & saltpetre are being exploited for use in road building and in other industries, under mineral concession.
8. AGRA	Kira.li & Kheragarh	Building Stone, ord. sand, mill- stone, ballast & kankar	Large quantities of building stone and ballast are available which are being exploited by private parties. Kankar is used for lime burning in Udajna village area in appreciable quantity.
	Agra, Bah, Fatehabad, Ferozabad and Etmadpur	Ordinary sand, Saltpetre & brick-earth.	Ordinary sand occurs in large quantities in the bed of Yamuna river and is exploited by private parties. Under Mineral Concession Saltpetre area have also been given under Mineral Concession.
9. MAINPURI	Mainpuri	Saltpetre & brick-earth	Occurs in significant quantity and being exploited under Rules.
	Shikohabad	Kankar ord. sand and brick-earth	-
	Jasrana	Kankar, saltpetre, reh, brick- earth	-
	Karbal	Saltpetre reh and brick earth	-
10. ETAH	Etah & Jalesar	Kankar, Saltpetre reh, ord. sand and brickearth	Kankar and saltpetre are exploited for small industrial use.

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<u>II. Rohilkhand Division</u>			
11. BAREILLY	Faridpur & Baheri	Ord. Sand Kankar & brick-earth.	Only small quantities are reported to be available.
12. BIJNOR	Bijnor & Nagina	Ord. Sand reh, boulders and Bajri.	Alluvial gold is found to occur sparsely distributed in brown sand beds in the Chandpur area of Bijnor Tehsil. Investigations by the Directorate did not reveal worth while concentrations. Gold is also reported to occur in the river sand near Dhamgarh in Nagina Tehsil.
	Najibabad	Boulders, Bajri, Ord. sand and reh.	Large quantities of sand are available as constructional material. Reh is also available in significant quantity. The areas of boulders, Bajri and ordinary sand are exploited under Rules.
13. BADAUN	Badaun, Sahaswan & Gunnapur	Kankar ord. sand brick-earth and Reh.	Available in significant quantities.
	Risauli	Kankar	-do-
14. MORADABAD	Moradabad	Clay, brick-earth.	'Pindoy' clay is available in Sirsekhera and is locally exploited.
	Amroha & Bilari	Kankar, brick-earth ord. sand.	Available in substantial quantities and is quarried by private parties. The areas of ordinary sand has been regularised under Rules.
	Hasanpur	Reh, brick-earth & Saltpetre	Reh occurs in significant quantities is exploited.
15. RAMPUR	-	Ordinary sand brick-earth and reh.	Available in significant quantities.
16. SHAHJAHANPUR	Jalalabad	Reh, Ord. Sand brick-earth and Kankar	Orr Occur in significant quantities.
	Shahjahanpur, Powayan & Tillar	Ord. Sand brick-earth kankar	-do-
17. PILIBHIT	-	Ord. sand, Bajri, brick-earth kankar	-

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IV. <u>Allahabad Division</u>			
18. FARRUKHA- BAD.	Farrukha- bad	Saltpetre, brickearth reh, kankar ord. sand & brickearth	Small quantities are available.
	Kaimganj and Chhibraman	Kankar and ord. sand	Available in significant quantity.
19. ETAWAH	Etawah, Bharthana and Bidhuna	Kankar, brickearth reh and saltpetre	The minerals are found in substantial quantity. The sand areas have been regularised under Rules.
	Auraiya	Reh, brick- earth.	-
20. KANPUR	Kanpur & Akbarpur	Kankar, brickearth Ord. sand reh and saltpetre	These are available in significant quantities.
	Bhognipur	Sand, brick earth, Morrur reh and saltpetre	The banks of the Yamuna re-potential areas for fine quality sand and morrur, for which underground mining is also done at Chaura, Dilaulia Bangar and Daultapur, Reh and saltpetre are found in significant quantities.
	Bilaur Dinapur & Ghatampur	Reh, brick- earth and ord. sand	Available in significant quantity. The area of ordinary sand and Morrur have been regularised under Rules.
21. FATEHPUR	All the Tehsils	Kankar, brick- earth, reh saltpetre Ord. sand & Morrur	The areas of ordinary sand Morrur and saltpetre have been regularised under Rules.
22. ALLAHABAD	Chail	Kankar, Ord. sand and brickearth	Kankar is used for lime burning and sand is also available in significant quantity. Ordinary sand areas has been regularised under Rules.
	Meja	Building stone, Ballast, brickearth, Ord. Sand	Ballast is available in substantial quantity and is quarried by private parties, Sand is also found. These working have been regularised under rules.
	Phoolpur & Soraon	Reh, brick- earth and saltpetre	These are available in significant quantities.

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	Karchhana	Glass-sand	<p>Large deposits of glass-sand are available in the areas north of Shankergarh in Bargarhi, Derabari, Bhainsahi and in Amgondar-Janwan areas also in Deoria village near Ghurpur. These are being quarried extensively by private parties. These glass-sand outcrops occupy in area of about 8 sq. miles and can sustain large scale exploitation. Most of the available materials is of a high grade.</p> <p>An area of about sq. kilometers has been reserved by the Govt. for exploitation in public/Joint Sector, where detailed geological investigations have been taken up by the Directorate.</p>
	Bauxite, Laterite stone ballast Building stone, Morrumb brickearth & ord. sand.		<p>Small deposits of bauxite are also quarried in the Manduri and adjoining areas. But exhausted. Building stones ballast occur in inexhaustible quantities and are extensively quarried. Under the UPTMCR, 1963 and subsisting lease under ZALR Act. The areas of Morrumb and ordinary sand have been regularised under rule.</p>

V. Jhansi Division

23. JHANSI	Jhansi	<p>Diaspore & Pyrophyllite. Substantial quantities of these occur in the Garhari-Palar and Tanda-Bawal areas near Garhmanu railway station. The deposits are being quarried by a private party for use in the refractory and insecticide industry. A pulveriser plant has been set up in Jhansi for processing the ores before sale. The Bawal deposit has been reserved by the Government for a high alumina refractory plant based on diaspore.</p>
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		Felspar & quartz.	This mineral sporadically occurs in small quantities.
		Ballast and dimensional stone.	These are available in large quantities and the main area is Jar Pahar in Jhansi city. Dimensional stone is available in Bhailar and Garhman, Private parties are quarrying these deposits on an extensive scale.
		Kankar, Ord. sand & morrum, building stone	These are available in significant quantities. Kankar is found near Sijwah.
	Moth and Guraita	Ballast and morrum	Substantial quantities of these are available and are being exploited.
	Maurani-pur	Ballast, dimensional stone, Morrum and molybdenum ore.	The constructional material is available in large quantities and are being extracted by private parties, Molybdenum ore is reported near Saprar dam, however it is so far considered to be of academic interest only.
	Lalitpur	Pyrophyllite, diaspore ballast, morrum & building-stone.	A deposit of pyrophyllite occurs in Larwari area and is suitable for exploitation. Another moderate size deposit of diaspore discovered by the Directorate is the Tori-Bar area, has been reserved for a high alumina refractory plant in joint sector. Detailed investigations are in hand. Ballast and other building material are available in large quantities and are extracted.
	Mahroni	Copper and iron-ore	Deposits are in the Sonrai-Solda areas which are under investigation with the Directorate. Recent work has shown good chances for copper-ore and substantial quantity of low grade iron ore.
		Gold	Alluvial gold is believed to have been worked near Phata.
		Pyrophyllite and diaspore	Substantial quantities of these occur in the Bijri-Dhankua areas where the deposits are being worked by private parties for use in the industry.
		Ballast, Ord. sand & morrum, & building-stone	These occur in large quantities and are being worked.
24. JALAUN	Orai	Ballast, brick earth and kankar.	Ballast is available in substantial quantity and is quarried, kankar is also found.
	Jalaun & Kalpi	Sand, morrum brick earth and kankar	Large deposits of sand and morrum are found on the bank of Yamuna and are extensively quarried. Kankar is present in significant quantity.
	Konch	Kankar	Occurs in significant quantity
25. HAMIRPUR	Hamirpur	Sand	Available from river beds in large quantities and regularised under Rules.
	Mohaba	Sand, morrum & ballast	Available in substantial quantities and are exploited.

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	Rath	Pyrophyllite diaspore, selenite, graphite & sand.	Pyrophyllite and diaspore occur in substantial quantities in Girwar, Paharigarhi and Tori villages and are proposed for mining by private parties. Selenite occurs in significant quantity along the bank of Birma and Arjun rivers, Graphite which is so far considered of academic interest only is also found on the bank of Birma river. Investigations by geo-physical methods are proposed on the graphite deposit.
	Charkhari	Pyrophyllite diaspore, ballast, sand and morrum	Mines of pyrophyllite and diaspore in Gorahari are being exploited by private parties. Pyroplyllite is also used for making pots and vessels on a cottage industry basis. These minerals are also found in Sukhra village in significant quantities. Sand, morrum and ballast occur in large quantities.
	Maudaha	Selenite, sand and salt+petre	Selenite occurs sporadically along the right bank of Birma river in significant quantity. Crystals of selenite are mixed with soil and it has to be examined if these deposits considered along with the deposits of Rath tehsil could be worked economically. Sand is found in large quantity and saltpetre is also reported.
26. BANDA	Banda	Sand, morrum, agate & kankar	Large quantities of good quality sand and morrum are available from the bed of Ken river near Banda town and the same are extracted by private parties. Agate (semi-precious stone) is also picked from the ken river bed on a small scale.
	Baheru	Kankar	It is reported to occur in small quantity.
	Karwi	Ballast, building stone and sand	These are available in large quantities The ballast of Bharatkup-Chitrakoot area is extensively quarried.
		China clay and Ochres	Deposits of china clay and ochres along with lithomarge occur in Iakhanpur, Kusmi and Ranipur forest block areas. These are mined by underground methods and substantial quantities are available.
	Karwi	Bauxite	About 10 million tonnes of low, medium and high grade bauxite, have been discovered by the State Directorate in the Rajehuan forest block 4.5 million tonnes of material having alumina over 50% have since been proved by detailed prospecting. This deposit has been reserved by the government along with the deposits of Distt. Varanasi. The two deposits together can be considered is joint sector for setting up an alumina manufacturing plant producing about 1,50,000 tonnes of alumina per year.

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		Diamond	The possibility of finding diamonds in the hills occurring south of Markundi is to be investigated.
		Dolomite	Large quantity of dolomite, which may be suitable as flux in the steel industry occurs between Chitrakoot and Khoh villages, south of Karwi. The deposits are being prospected in detail by the Geological Survey of India.
		Glass-Sand calc-tuffa and quartz	Substantial deposits of glass-sand are reported near Markundi, Calc-tuffa is also found in the tehsil in the Chauri forest area in good quantity and may sustain a lime burning industry. A small deposit of crystalline quartz is reported from near Bharatkup.
	Mau	Glass-sand	Large quantities of high grade glass-sand are available in the area south and north of Bargarhi and in Pardawan, over an extensive area. The deposits are exploited by private parties.
		Building stone, ballast and sand	Inexhaustible reserves of building materials are available and are worked by private parties. Large quantity of sand is also available.
	Naraini	Ballast, Building stone and diamond	Large quantities of ballast and building stones are available, and are exploited. There is a possibility of locating diamondiferous areas near Kalinjar in river beds.

VI. Varanasi Division

27. VARANASI	Varanasi, Gyaipur & Chandauli	Reh, Kankar, brickearth and sand	Substantial quantities of these are available, the sand of Karamnasa river is extracted on a large scale from Chandauli Tehsil.
	Chakia	Glass-sand buildingstone Ballast, sand and morrum	Substantial deposits of glass-sand are known to occur, however, have not been investigated in detail so far, Building material is extensively quarried. Large deposits of sand occur in Karamnasa river bed.
		Bauxite	A deposit has been reported by the geological survey of India, whose investigations show the availability of 1.5 million tonnes of metal grade ore. The deposit has been reserved by government for exploitation in public/joint sector.

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28. MIRZAPUR	Mirzapur and Chunar	Sand, building stone and reh.	Large quantities of building stone are available and ore worked by private parties for making stone slabs, mill-stones and ballast. Sand is also available in substantial quantity.
	Roberts-ganj.	Building stone and sand	Large quantities of these are available in the Tehsil and are being exploited. The sand of the Son river bed is regarded to be of a good quality and is extracted on a large scale.
		Calcite	Significant deposits are available in the Onaulia & Jungel areas & are proposed to be exploited by a private party.
		Dolomite	The State Directorate has found about six million tonnes of high grade dolomite in the Bari-Bagmana and Harya hills, south of Son river. The material is suitable for use in the steel melting shop and its exploitation is being done by the U.P., State Industrial Corporation for supply to the steel plants. There is also a possibility of finding good dolomite near Obra.
		Iron-Ores	Low grade iron ore has been found in the Obra-Parsoi areas. Some pockets of good ore are also available. The Directorate has estimated a reserve of 1.8 million tonnes of ore averaging about 49% iron, that may be available after selective mining and mixing.
		Limestone	Large quantities of limestone suitable for cement manufacture are available in the Ghurma, Makribari, Rudauli, Kanach and Basuhari areas along a belt of about 30 miles north of Son river. The Government Cement Factory, Churk is utilising about 2000 tons of limestone per day from its quarries in the Ghurma-Markundi-Makribari areas. The belt between Kanach and Basuhari is lying unused so far, however, small portions are exploited for use in lime making industry. The belt occurring between Markundi in the east and Silpi Ghat in the west is also lying unused, and the Directorate is commencing investigations on the same.
			Large deposits of limestone, suitable for cement manufacture and as flux in the steel industry are also available in the Kota-Jurwani-Kajrahat-Dalla-Billi areas south of Son river. Detailed proving has been done by the Directorate in this area; in Kajrahat and Jurwani area alone, reserves of

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			<p>over 50 million tons of limestone, having a border line composition suitable for cement manufacture have been proved. The proving report is under compilation. The new Government cement factory at Dalla will utilise these deposits for producing about 1200 tons of cement per day with plans to double the production eventually. Besides about 10 million tons of high grade limestone is also available in the Kota area, and it is hoped that Billi area would also show large reserves. The U.P. State Industrial Corporation has taken a lease for Billi area and have plant to exploit the materials for the steel industry.</p>
	Marble		<p>Substantial quantity of good quality marble, suitable for statuary purposes, for making chips and for the chemical industry is available at Ningha near Obra. The deposit can also be used for blending with border line composition limestone of Kajrahat-Jurwani, for use in the new Dalla Cement Factory. Detailed investigations by the Directorate have revealed two qualities of marble (1) with CaO between 48.57% to 51.55%, MgO 0.45% to 1.94%, silica 5.44% to 8.76%, and (2) CaO 48.12% to 49.32% MgO 2.32% to 3.32%, silica 4.19% to 7.33%. Reserves of the two qualities respectively are estimated at 4.8 and 2.5 million tonnes. Both the qualities are considered suitable, in depth, for making slabs. Mining of this deposit is planned in public/joint sector.</p>
		Nickel-ore	<p>There are possibilities of finding this mineral in the area near Parsoi and the same is under investigation with the Geological Survey of India.</p>
	Dudhi	Andalusite	<p>Substantial quantities have been found in the area near Wyndhanganj by the Geological Survey of India. The mineral has to be tested for use as a refractory material.</p>
		Ballast	<p>Large quantities are available, however the material is extracted on a small scale for road building.</p>
		Coal	<p>Large reserves of second to third grade coal are available in the Khadia-Bansi and Dudhichna areas near Kota on the Madhya Pradesh border. About 900 million tones of coal are indicated by the Geological Survey of India, out of which 70 million tonnes have been proved.</p>

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		Clay	Two to three million tons of refractory clay are available in the Bansi, Misra and Makhrikhoh areas investigated by the State Directorate. It can be used for making medium heat duty fire bricks, after blending with a suitable plastic clay. Exploitation is planned in joint sector.
		Felspar, iron-ore & Mica.	Sporadic deposits of feldspar are known in the Tehsil on a small scale. Iron ore (magnetite) is found near Kurchi, but the quantity is small. Mica occurs near Dhurpa in insignificant quantity.
29. JAUNPUR	All the tehsils	Kankar, brickearth, reh, and ordinary sand	Substantial quantities of these are available. Kankar is used for road building and for making lome.
50. GHAZIPUR	Ghazipur & Mohammadabad	Kankar, brickearth and reh.	Substantial quantities are available and have been worked.
	Saidpur	Reh, Ord. sand & brickearth	Significant quantity is available and the material is excavated.
	Zamania	Kankar, brickearth & saltpetre	These are found in significant quantities. Saltpetre has sometimes been worked on a substantial scale. The sand areas have been regularised under rules in the district.
51. BALLIA	Ballia	Kankar, Ord. sand & brick earth	Substantial quantities are available and are worked.
	Rasra	Kankar, Reh, Ord. sand, brickearth	- do -
	Bansdih	Reh, Ord. sand brickearth & saltpetre	- do -

VII. Gorakhpur Division

32. GORAKHPUR	Bansgaon Gorakhpur	Kankar, Ord. sand brickearth and reh.	Significant quantities are reported in Hata, Bharthari, Gajpur, Bhawani-pur, Dubra etc., where they are worked from time to time. The sand areas have been regularised under rules.
	Pharenda Mahrajganj	Kankar, brickearth, & Ord. sand	Substantial quantities of kankar are available and have been worked. Sand is also found in large quantities in Shamkhat, Sukrauli, Bargadwa and Nertanwa areas, where it is worked by private parties. The sand area have been regularised under Rules in this district.

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DEORIA	Deoria	Kankar,Ord.sand & brickearth and saltpetre	Kankar is found in significant quantity however, saltpetre deposits are small.
	Salempur	Kankar,Ord.sand,brick-earth,reh and saltpetre	These are available in small quantities. The sand areas have been regularised under Rules in the district.
BASTI	Basti & Bansi	Kankar,reh, Ord.sand & brickearth	Kankar is found in significant quantities and reh is also reported.
	Domariaganj Naugarh, Khalilabad & Harraiya	Kankar, brickearth, & Ord.sand	Substantial deposits are available and are worked by private parties. The sand areas have been regularised under Rules in this district.
AZAMGARH	Azangarh, Lalganj, Ghosi & Mohammadabad	Kankar,reh, ord,sand & brickearth	Substantial quantities are available and are worked. The sand areas have been regularised under Rules in this district.
	Sagri and Phulpur	Kankar,reh, Ord.sand & brickearth	Substantial quantities are available and are worked.

VIII: Kumaon Division

NAINITAL	Nainital	Building stone	This is available in some areas and is only locally used.
		Copper and coal	These are known to occur in insignificant quantities.
		Gypsum	Significant quantity is available in the Nahal river valley near Dhapila village the deposits are not being worked.
		Iron-ore	Significant quantities of medium to low grade ore are available from Ramgarh, Kaladhungi and Dichauri areas, however, the deposits are so far considered uneconomical.
		Limestone	Substantial deposits are available near Nainital, but they have been exploited only on a small scale from time to time in the lime making industry.
		Mangnese ore	This is reported from the Ramgarh area.
	Haldwani	Gravel and sand(River Bed material)	These are available in large quantities in the rivulets, and are worked as constructional materials.

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AIMORA	Almora	Building stone.	Slates suitable for building purposes are available in substantial quantities and are utilised locally.
		Copper ore.	Deposits of this are known in Dewaldhal Ghirauli, Theka, Phadyari, Rain Agar, Ganai etc. where copper ore has been mined in the past. Investigations so far done have not revealed economically workable deposits.
		Graphite	Low to medium grade graphite occurs in several places in the Tehsil, however, Kalimatti and Banini Devi areas are worth mentioning. This material may be available from the Tehsil in significant quantities, however, the suitability of the mineral for industrial use is still to be proved.
		Lead-Zinc-silver ore	Good indications of finding ore are available in the Chanapani-Siskhani area of Patti Kharahi, however, the deposits have not so far been proved to be economically exploitable. The work done earlier by the G.S.I. is being continued further by the State Directorate and the Mineral exploration Corporation of the government of India.
		Magnesite and Soapstone	These minerals are found associated together in substantial quantities, and about 10 million tons of magnesite the estimated on the basis of surface investigations by the Indian Bureau of Mines in the Greechhina and Jhiroli areas. The State Directorate conducted proving operations of the Jhiroli deposits, and reported the availability of 4 million tonnes of magnesite. These reserves would be used in the newly setup plant at matila for dead burning magnesite, by M/S Almora Magnesite Limited, a company formed by U.P. State Industrial Corporation in collaboration with M/S Belpahar Refractories Ltd. Large deposits found earlier by the Directorate in Pung River valley have been taken up for detailed investigation. Some deposits also, occur in "Lahore" river valley. Soapstone is available in the Grichhina, Pungar valley and Lahore valley areas in substantial quantities. It is also found in the Saryu valley, south-east east of Bageshwar and in some areas south east of Kapkote. An industry for the quarrying of soapstone has been recently started by a private party, M/S N.San Corporation Private Ltd.,

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			Calcutta in the Lahore valley area and the mineral is also being exported in limited quantities.
		Marble	A small deposit has been found by the State Directorate in the Jhiroli area.
	Ranikhet	Graphite	Significant quantities may be available from this Tehsil, however, systematic work needs to be done.
		Iron-ore	Deposits are known from Simalkhet and siroli areas, however, their exploitation seems difficult due to small reserves.
		Soapstone	It is known to occur in significant quantity suitable for exploitation, north of Dwaharat.
	Champawat	Graphite	This is available in Diuri, Ukka - kot Chira and other areas.
<p>Large reserves of unknown grade of limestone and dolomite are also available in Tehsils Almora and Ranikhet.</p>			
GARHWAL	Pauri	Copper ore	It is reported from Kunet in the Dudatoli area and Dobri village and is considered to be of academic interest only.
		Iron ore	Reported from Bharnaun area. The deposit is an abandoned old working.
		Mica	Mica is reported from some localities near Thaliasen distt. Garhwal. One area has been already leased out to a private party. Preliminary investigations by the State Directorate show several pegmatite dykes yielding books of mica upto 6 inches in length. Detailed works have been undertaken.
	Lansdown	Gypsum	Substantial quantities of this ore are available in the Lachmanjhoala area where it is quarried by a private party. If considered alongwith the deposits of Tehri-Garhwal and Dehradun these deposits may be capable of feeding one or two cement factories. The mineral is of average to high grade and estimated reserves are about 0.1 million tons.
		Limestone	About 80 million tonnes of sandy limestone are available in the Simalkhet, Manikot, Nilkanth and Khargosha areas which may be used for cement manufacture after beneficiation.

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Tests on bulk samples undertaken by the State Directorate through the National Metallurgical Laboratory, have shown that the material can be easily beneficiated, however, the cost of beneficiation would be Rs.5.03 per tonne of concentrate produced. The site of the deposits is otherwise ideal for a cement factory and the U.P. State Cement Corporation is contemplating to set up a cement plant to feed the requirements of the newly proposed Tehri Dam. The Directorate is now commencing detailed prospecting operations in the area.

Phosphorite Some deposits have been reported by the State Directorate in the Binj valley.

39. TEHRI
GARHWAL

Nagini

Dolomite Large deposits of good quality dolomite suitable for steel melting shop are available in the Sera-Ragargaon-Chipaldi areas, however, their exploitation has not been possible due to the long distance from the steel plants. Small parts of this belt have been leased out to private parties besides the deposit near Shivpuri which is being mined.

Gypsum Substantial deposits occur in the Mahirpur-Chipaldi river section, Sera, Dhaulgot and Am Sot areas. They are exploited by private parties. The mineral is of average to medium grade.

Limestone Large reserves of high grade limestone with CaO 46%, MgO 3% and SiO₂ 3% are available in the Dubra, Ghursalgaon, Nagini and other areas. The limestone is sent mainly to sugar mills for bleaching purposes. It is also used extensively for making building lime.

Marble It is reported from the Nagini area and is proposed for exploitation by a private party.

Phosphorite The Geological-Survey of India have found substantial deposits in the Nagini and other areas of the Tehsil. These deposits may be considered along with the Dehradun deposits for use in the fertilizer industry large reserves of the mineral with 20% P₂O₅ content are estimated.

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	Deoprayag	Copper-ore	This is reported to occur along a belt between Kaproli in the south-east and Dagar in the north west. Investigations need to be done.
		Iron ore	This is found in the Lowagaon area in insignificant quantity.
	Pratap Nagar	Copper ore	Occurs in the Asena-Koti area in continuation of the Kaproli area Dagar belt of Devprayag Tehsil.

IX. Uttarakhand Division

10. UTTARKASHI	Dunda	Copper ore	It is found in Bagori area, which appears to be the continuation of the Kaproli-Dagar-Asena belt of Tehri-Garhwal. The area requires to be investigated.
	Bhatwari	Kyanite	This mineral occurs associated with schists and it may be possible to find rich areas.
	Rajgarhi	Lead-ore	It is reported from Pindki and needs to be investigated.

Substantial reserve of unknown grade of limestone and dolomite are also available in all the Tehsils.

1. CHAMOLI	Chamoli	Biotite (radio-active)	This mineral is reported to occur near Pokhri and is under investigation with the Atomic Energy Commission, and no details are available.
		Copper-ore	It is found in the Pokhri and Mohankhal areas where it was worked in the past. Work has been carried out by the Geological Survey of India, and no details are available.
		Iron-ore	This is found in Bhukunda, Ali and Naganath areas, however the deposits appear to be insignificant.
		Stibnite (antimony-ore).	The Geological Survey of India is reported to have found a good deposit of antimony-ore in the Pokhri area and the investigations are in progress. It has also been found near Nandi-prayag, however, no details are available.
		Sulphur	A significant deposits of sulphur is found in the Roopganga valley near Sutol, which needs to be investigated.
	Joshimath	Copper-ore	Mineralisation has been seen on the motor road north of Gulabkoti.

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		Magnesite & soapstone	Good deposits of soapstone occur in Alakhananda valley near Torosi and Hiuna villages, which have been exploited in the past. Magnesite also occurs at Torosi and near Jaisal village. Systematic investigations are yet to be carried out.
Okhimath		Asbestos	Asbestos of amphibole variety has been found by the State Directorate along a belt of over 15 miles in villages Jagot, Kandhara, Jalai etc. It may be possible to find substantial quantity of the materials, however, it has not been found suitable for such important industries so as to withstand the high cost of transportation.
		Copper-ore	It is reported near Jalai
		Arsenopyrite	This is reported at Maku.
Karan Pryag		Magnesite & soapstone	Substantial quantities of these are available in the Pindar and Kailganga valleys. A deposit of soapstone adjoining the Almora border near Gaunapani is likely to be exploited by a private party.
		Copper-ore	The deposit occurring at Dhanpur is reported to be promising and is under investigation with the Geological Survey of India. No details are available.
		Lead	This is reported at Gwar near Dhanpur and has been worked in the past.
		Sulphur	This occurs at Kilbara in the Pindar valley and appears to be significant.

Large reserves of unknown grade of limestone and dolomite are also available in all the Tehsils.

2. PITHORA GARH	Pithora- garh	Copper	Occurrences are reported from Askot and Dewalthal. The zone of mineralisation is Askot, has been traced by the G.S.I. and is reported to be prospective. Detailed investigations are in hand with the G.S.I.
		Soapstone	Good pocket deposits of soapstone has been reported near Thal Dewalthal, Kamalichhina and Chandok and it is being exploited by the private party.

Contd.....18

1	2	3	4
		Magnesite	Large quantities are available from Dewalthal and Chandag areas. A part of the Chandag area has been leased out to private parties, while the rest is being considered for M/S Hindustan Steel Limited along with the Dewalthal area. The State Directorate is carrying out investigations on the Dewalthal deposits.
	Munsiari	Arsenic-ore	This is reported from Munsiari and morrain of Shunkalpa glacier. The occurrences need to be investigated.
		Pyrite	A small deposit has been found by a private party. This mineralisation may have a large scale extension and a systematic investigation is therefore planned by the Directorate.
	Dharchula	Garnet	Rich development of garnets has been reported near Jipti in the schistose rocks and a search for good deposits is indicated. The material may prove to be useful as abrasive.
		Kyanite	Kyanite-schists are found north of Jipti and sometimes the kyanite occurs in large crystals. Search for concentrated deposits is indicated, however, the area has a difficult access.
		Sulphur	A hot sulphur spring containing significant quantity of colloidal sulphur occurs at village Dar. Sulphur content is about 3gms. per gallons of water.

Large reserves of unknown grade of limestone and dolomite are also available in all the Tehsils.

X. Lucknow Division

• LUCKNOW	Lucknow, Malhiabad and Mohanlal-ganj.	Marl,Ord. sand,brick-earth,Kankar and reh.	Substantial quantities of marl and kankar are available in the district. Mohanlal-ganj, tehsil is known for large reserves of kankar from Rasulpur, Tik Sunethra, Dayalpur, Nandauli etc; in Malhiabad tehsil Manbhauna area contains substantial reserves. Marl is found in substantial quantities in Raniganj, Hasanpur and Chinhat areas, and can be considered along with the deposits of Unnao district for the establishment of a cement plant. however, feasibility studies are yet to be carried out.
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The kankar deposits are also being considered for setting up of small cement plants by the planning Research and Action Institute. The State Directorate of Geology and Mining is carrying out investigation of these deposits.

Reh is reported from some areas in various Tehsils where it is locally used.

4. UNNAO

Unnao,
Hasanganj
and Purwa

Marl,
kankar,
Reh, Ord. sand
brickearth
& saltpeter

Substantial quantities of marl and kankar are available. The kankar deposits are locally worked for use as road materials. Marl is found in substantial quantities in Ajgain, Jaitipur and Purwa and can be considered along with the deposits of Lucknow distt. for establishment of a cement plant, however, feasibility studies are yet to be carried out. The estimated reserves of marl in Lucknow and Ajgain areas are 4 million tons and 6 million tons respectively. Substantial quantities of saltpeter is available.

Reh is also reported from various tehsils where it is locally used.

Shafipur

Kankar, reh
Ord. sand
saltpeter &
brickearth

These are available in economic quantities.

45. RAE
BAREILY

Dalmau

Marl,
kankar, reh
Ord. sand &
brickearth

Large deposits of marl are available in the Dalmau-Lalganj area in the Okbo-lakes between the Sai river and Ganga river. About 5 million tonnes of marl are estimated. As in the case of Lucknow and Unnao areas, these deposits may also be considered for cement manufacture. Kankar is available in substantial quantity and is used locally in road building. Reh is also available in substantial quantity and is worked from time to time.

Salon and
Mahrajganj

Kankar, Ord.
sand, brick-
earth and
reh.

Substantial quantities of these are available from the two tehsils and worked locally.

46. SITAPUR

Sitapur &
Sidhauli

Kankar, Ord.
sand & brick
earth

Substantial quantities are found in the two tehsils from where it has been worked from time to time.

Contd..... :

1	2	3	4
	Misrikh	Kankar,reh Ord.sand & brickearth	These are available in substantial quantities and are locally used.
47.	HARDOI	Hardoi, Kankar,reh Shahabad Ord.sand, & Sandila brickearth & saltpeter	These are reported to be available in substantial quantities.
48.	LAKHIMPUR KHERI	- Kankar,reh Ord.sand, brickearth & building- stone(River bed material)	Deposites of these are found sporadically in the district, however, they have not so far been exploited on any substantial scale. The river material deposit are available in the rivers coming from Nepal near border area.
XI <u>Faizabad Division</u>			
49.	FAIZABAD	All the Kankar,brick tehsils earth & Ord. Tanda, sand Faizabad	Substantial quantities are available in the district and the most prominent is that of Ak barpur tehsil.
50.	GONDA	- Kankar,brick- earth,Ord.sand and boulder (River bed material)	These are found in substantial quantities and are worked for local use. Sand and boulder are found in the north areas.
51.	BAHRAICH	- Kankar,brick- earth,Ord.sand and boulder(River bed material)	Kankar is found in small quantities, however, sand and boulder are available in substantial quantities in the north areas.
52.	SULTANPUR	- Kankar,reh Ord,sand & brickearth	Substantial quantities are available and are worked by private parties for local use in road building. Reh is found in Musfirkhana and Amethi.
53.	PRATAPGARH	- Kankar,reh Ord.sand & brickearth	Substantial quantities of these are available.
54.	BARABANKI	- Marl,Kankar, Ord,sand & brickearth	Substantial quantities of kankar are available in Tehsils. Nawabaganj, and Fetehpur and other areas, and have been worked on an extensive scale, about 1million tons of marl are also estimated from the Ramnagar-Abdullapur areas.

NOTE:- The information given above has been compiled with the help of available reports of the Geological Survey of India, the Directorate of Geology & Mining, U.P., and the Industrial Outlook Reports, 1956 of various district printed by the Industrial Directorate, U.P., Besides, information from field officers of the Directorate of Geology & Mining, U.P., has also been incorporated through personal communication.

: 22 :

The notification of brick earth under U P M M C R 1963 has been challenged in the court hence the regularisation proceedings are stayed in the State till the final decision.

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