

# MINERAL SURVEY REPORTS JAMMU & KASHMIR GOVERNMENT.

---

NON-METALLIC MINERALS

OF

JAMMU AND KASHMIR

BY

C. S. MIDDLEMISS, C.I.E., F.R.S., F.G.S.,

*Superintendent, Mineral Survey, His Highness' Government,*

JAMMU AND KASHMIR.



JAMMU:

Printed at "The Ranbir Government Press"—25-1-87—300.

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## P R E F A C E.

This report on the Non-Metallic Minerals is the eighth of the present series issued by His Highness' Government of Jammu and Kashmir. As explained in the Introduction, it omits certain economic minerals of this class reports on which have already been published separately. A few other minerals, not yet specially investigated, or which for the present are under the control of the Revenue Department, are also omitted. Among the latter are common salt, borax, *phulli* (mainly sodium carbonate) and ordinary clay. If building-stone, road-metal and such like mineral aggregates may be considered to belong here, all that it is necessary to say about them is that they naturally occur almost everywhere in inexhaustible amounts in this mountainous State. The control of their output is vested in the Revenue Department, and they have received as yet no special attention from the Mineral Survey.

Although this report appears under my name and responsibility, the discoveries made, the collection of material in the field, and the examination of it at head-quarters have been fairly equally shared with me by my two present Assistants, Messrs. Labhu Ram Badyal, M. Sc. and Sohani Ram, B. Sc.

Chemical analyses, in some cases, have been done by officers of the Geological Survey of India, through the courtesy of the Director, and by the Government of India Test House, Alipur (Calcutta); others by Prof. B. K. Bose, M. Sc., of the Prince of Wales College, Jammu; and others again by the Industrial Chemist, Srinagar, and by the Mineral Survey. An experiment in Low Temperature Carbonisation of a consignment of Kashmir lignite was made by the Tozer Company of Battersea, London, and the fractionation of the crude oil obtained therefrom was done by Dr. Mollwo Perkin, C. B. E., F. I. C. An experimental sale of lignite for household consumption was undertaken by the Forest Department at the Fuel Depôt, Lal Mandi, Srinagar. A few other extra-departmental tests of minerals are acknowledged in the text.

This account will be followed by another on the Precious and Semi-precious Gemstones of the State, as soon as it can be put through the press.

Subjoined is a list of published reports on Kashmir minerals that have so far appeared since the Mineral Survey started work in 1917,

the first three in the *Records of the Geological Survey of India* :—

- (1) Note on the Aquamarine mines of Daso on the Braldu R., Shigar Valley, Baltistan, (published in *Records, Geological Survey of India*, Vol. XLIX, pt. 3, 1918, with plates 6 to 10).
- (2) Possible occurrence of Petroleum in Jammu Province: Preliminary note on the Nar-Budhan dome of Kotli Tehsil in the Punch Valley, (published in *Records, Geological Survey of India*, Vol. XLIX, pt. 4, 1919, with plates 13 to 16).
- (3) Lignitic Coalfields in the Karewa formation of the Kashmir Valley, (published in *Records, Geological Survey of India*, Vol. LV, pt. 3, 1923, with plates 28—30).
- (4) Abrasives : Note on the Polishing material of Risin Spur Khunamuh near Srinagar, (printed by order of the Kashmir Government, with plates 1 and 2).
- (5) The Graphite deposit of Braripura, Uri Tehsil, Kashmir, (printed by order of the Kashmir Government, with plates 1 to 5).
- (6) Ochre deposits of Nur Khwah, Rata Sar and Jhuggi in the Jhelum Valley, Uri Tehsil, Kashmir, (printed by order of the Kashmir Government, with plates 1 to 6).
- (7) The Gypsum deposit of the Lachhipura, Bagna, Islamabad, Limbar and Katha nalas, Uri Tehsil, Kashmir, (printed by order of the Kashmir Government).
- (8) Bauxite deposits of Jammu Province (printed by order of the Kashmir Government, with plates 1—17).
- (9) A Resurvey of Jammu Coalfields : The Kalakot, Metka and Mohogala fields (with notes on the Chakar, Chinkah and newly discovered Dhansal-Sawalkot fields), (printed by order of the Kashmir Government with plates 1—25).

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- (10) Ore deposits of Lead, Copper, Zinc, Iron and other metals, in Jammu and Kashmir State, (published by order of the Kashmir Government, with plates 1—16).

C. S. MIDDLEMISS.

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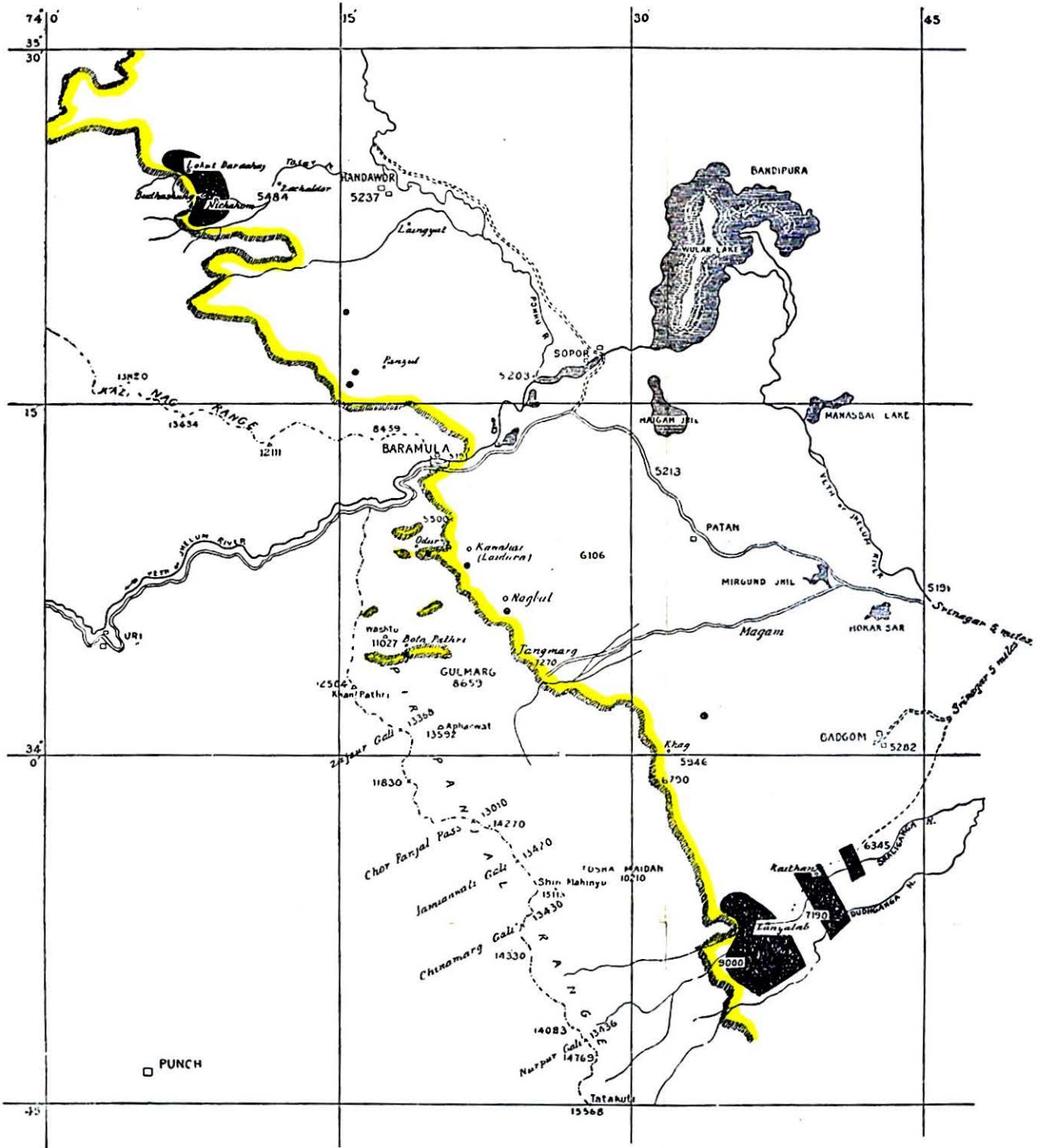
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OUTLINE MAP  
SHOWING KAREWA FORMATION  
AND LIGNITE OCCURRENCES  
IN PART OF KASHMIR VALLEY



Scale 1 inch = 8 miles  
Miles 4 3 2 1 0 0 1 2 3 4 Miles

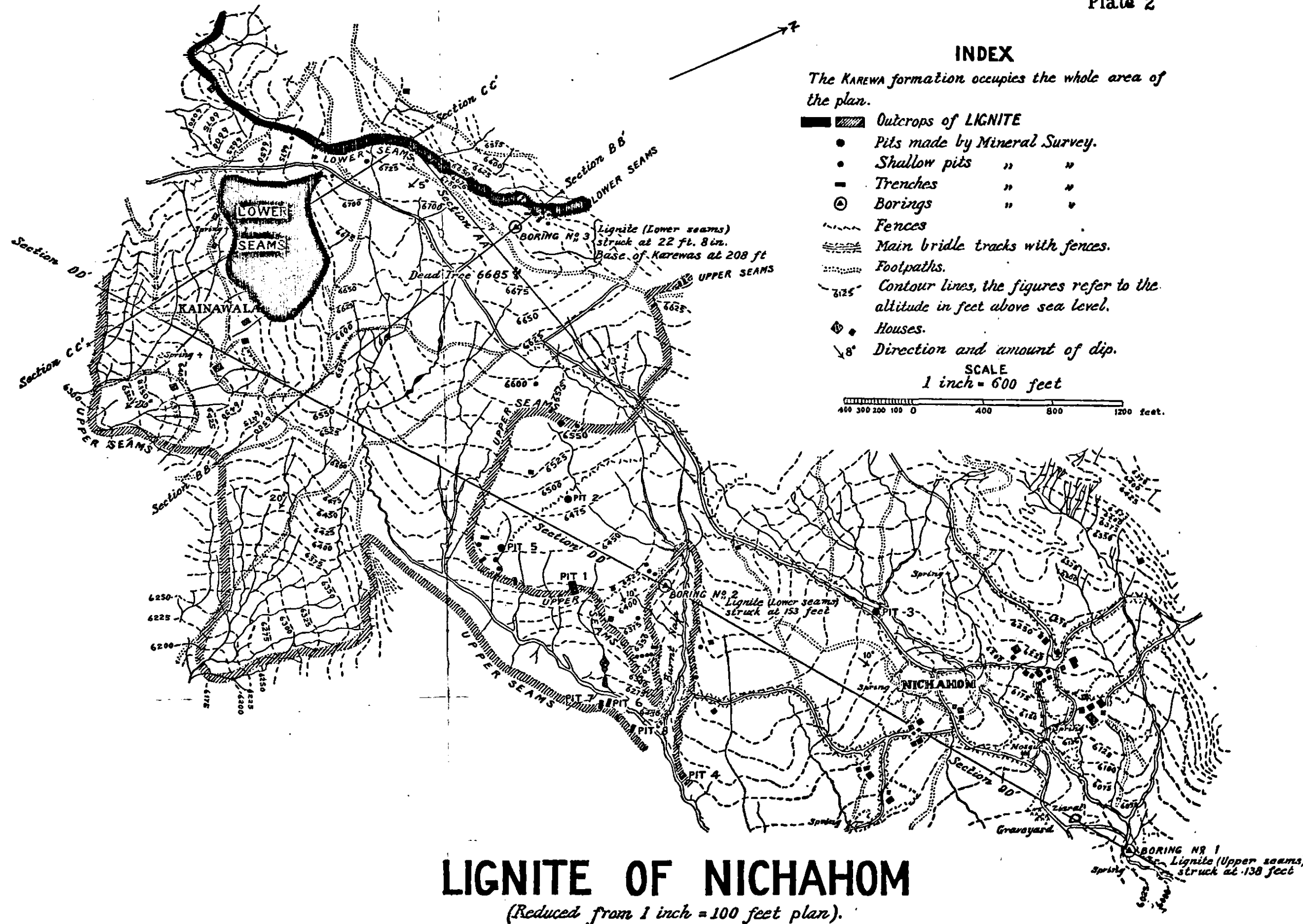
INDEX

- S.W. border of Karewa formation
- Lignite fields (surveyed).
- Exposures of lignite (not yet surveyed)
- Line of watershed
- Metalled roads
- Unmetalled cart tracks

(Altitudes in feet above sea level are shown by numbers)

# MINERAL SURVEY OF KASHMIR

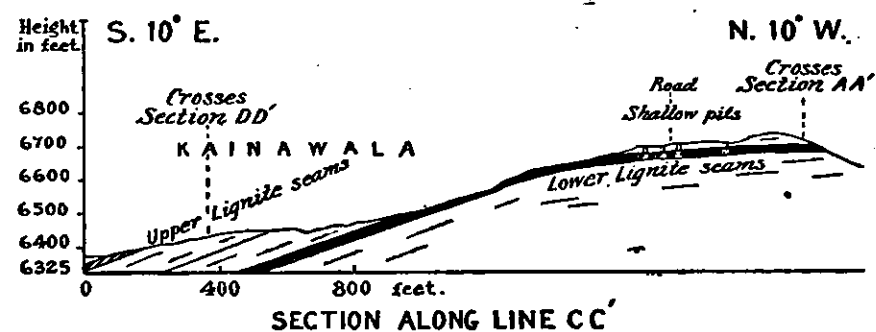
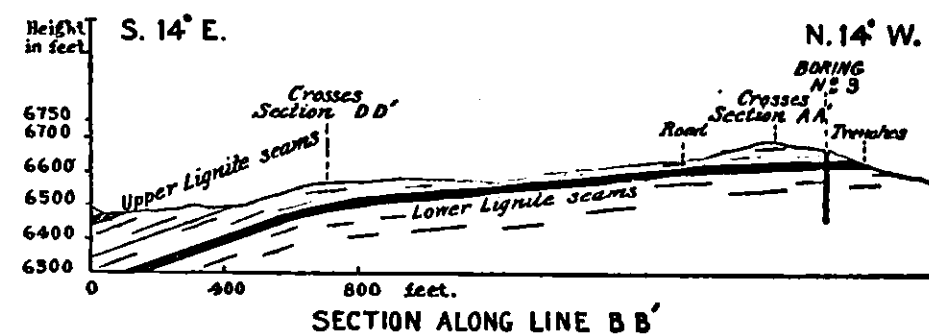
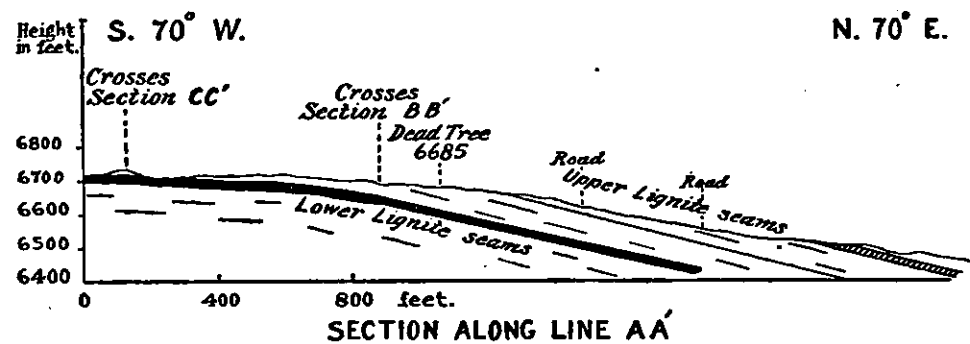
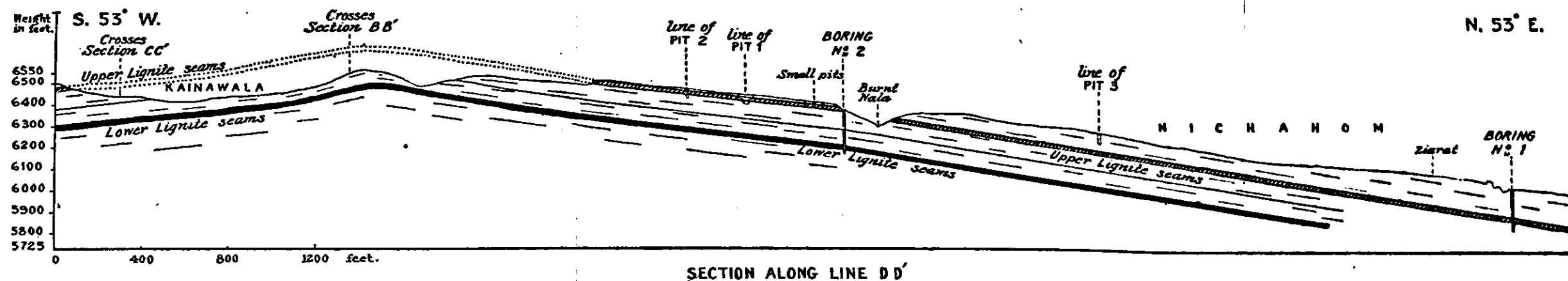
Plate 2



# MINERAL SURVEY OF KASHMIR

Plate 3

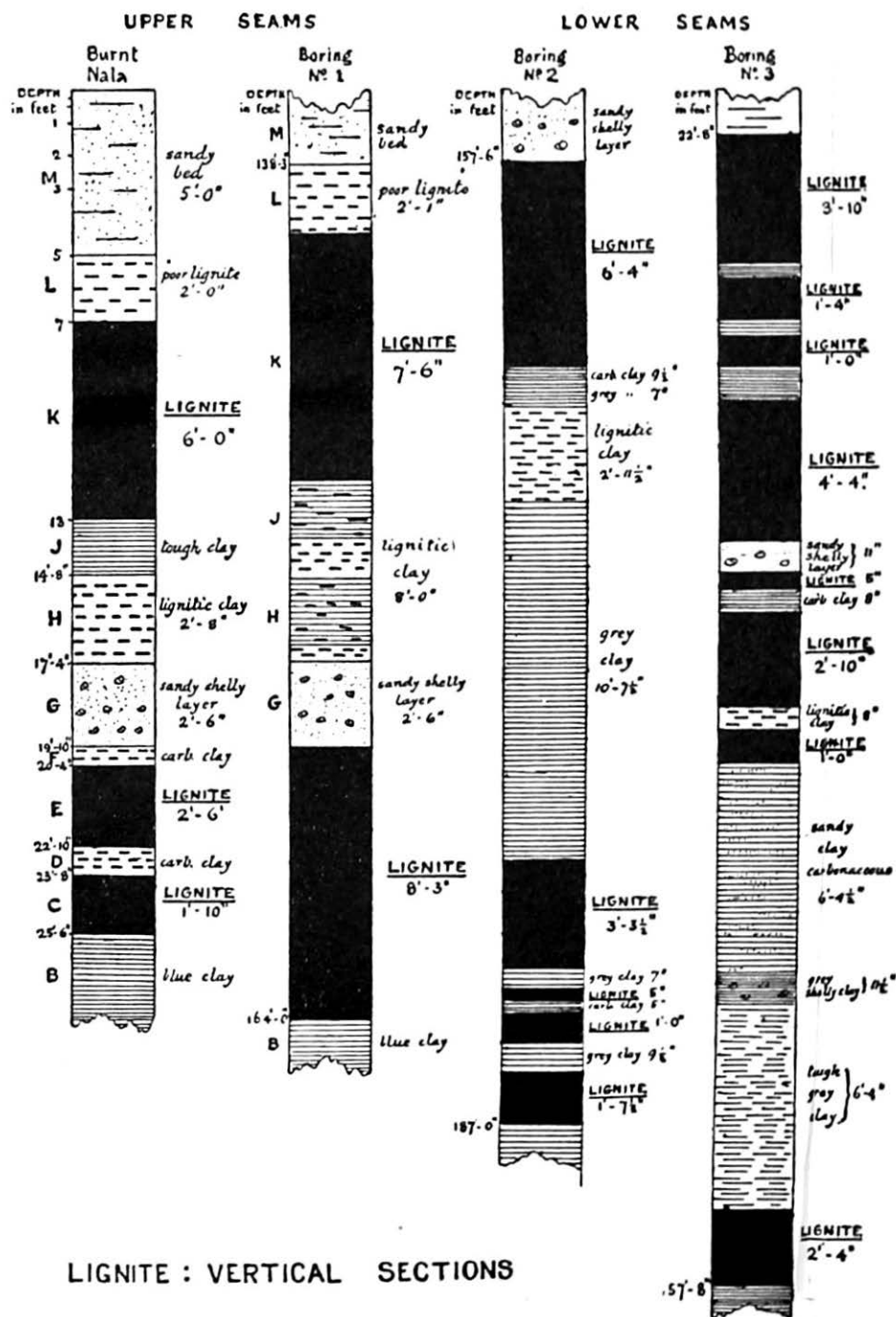
N. 53° E.



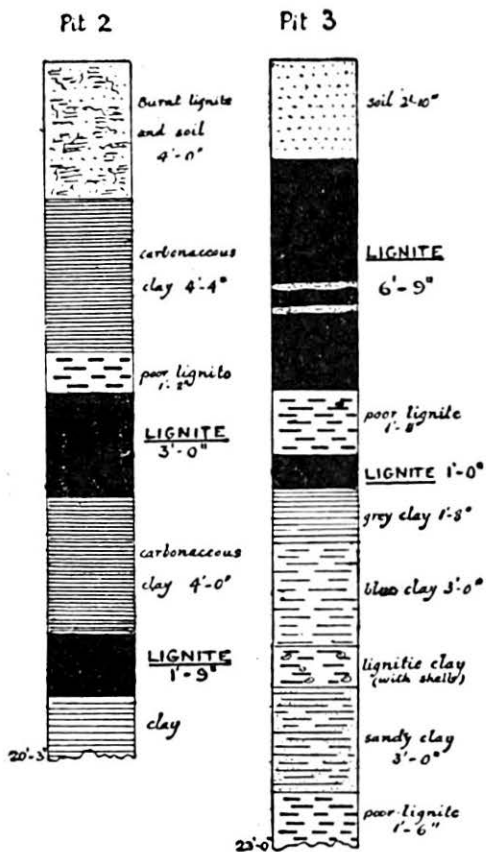
## LIGNITE OF NICHAHOM SECTIONS

Scale: 1 inch = 600 feet, (horizontal and vertical).

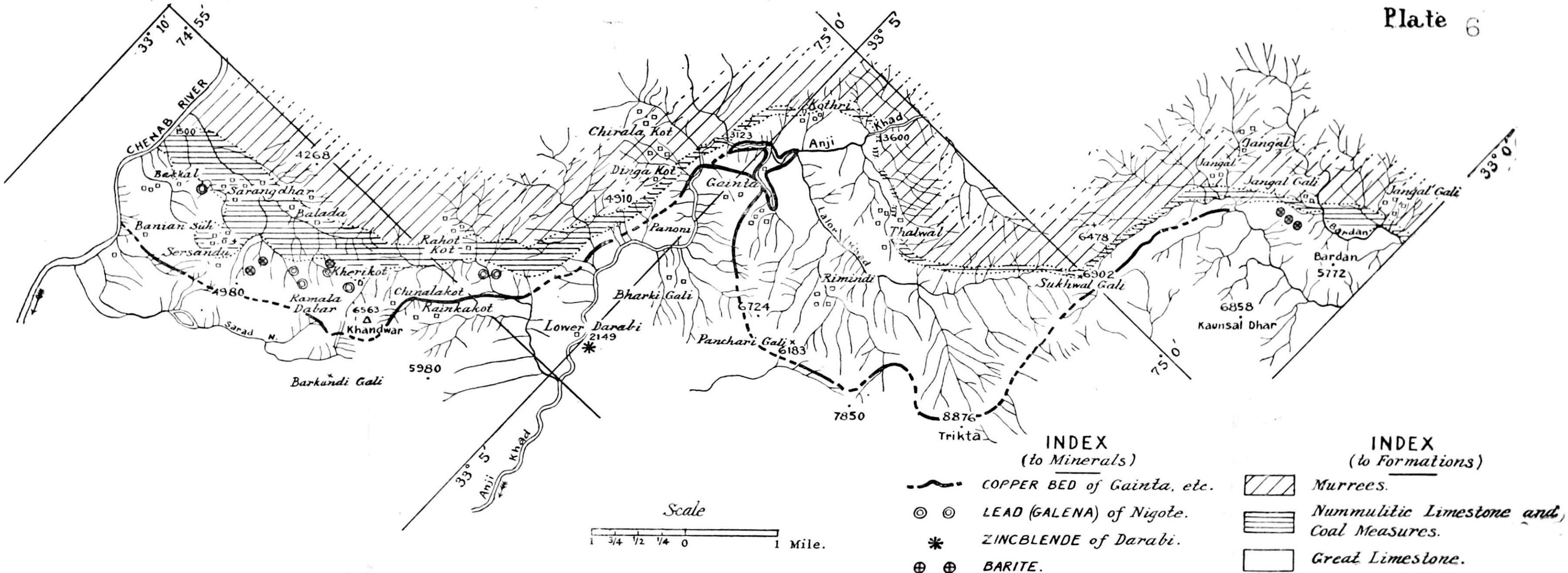
# MINERAL SURVEY OF KASHMIR Plate 4 NICHAHOM



MINERAL SURVEY OF KASHMIR  
 BUDHASHUNG Plate 5



LIGNITE: VERTICAL SECTIONS



COPPER LEAD ZINC AND BARITE RIASI DISTRICT