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Ancient Monuments Laboratory
Report 21/86

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Summary

A detailed micromorphological investigation of a post Boudicaa deposit at Colchester showed it to be a spread of destruction debris, unaffected by cultivation, colluviation or re-use for insubstantial dwellings. The study is supported by 9 Colour Plates.

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SOIL REPORT ON A POST BOUDICAA DEPOSIT (L. 1814) AT CULVER STREET, COLCHESTER, ESSEX.

R I Macphail - July 1986

In May 1985 the Colchester Archaeology Unit were continuing the excavation of Culver Street, Colchester. Of particular interest to the archaeologists was the origin of c.45cm of dark reddish-brown (5YR3/3) deposit (Plate 1.) which occurred immediately over the burned Brickearth clay wall foundations of Roman barracks destroyed by Boudicca's revolt of AD59. The deposit itself was capped by a sandy foundation for a number of Roman floors, eventually topped by a tessalated floor level (Plate 1). As the deposit was ubiquitous in the area it was necessary to interpret it properly as it represented a major landuse phase after Colchester had been destroyed. The deposit, which strongly contrasts with the much darker "Dark Earth" on the site (and on other Roman urban sites) had been tentatively described as a ploughsoil, but without any supporting evidence.

A large undisturbed monolith sample was taken for thin section manufacture, in addition to a bulk sample. Samples were analysed (Avery and Bascomb, 1974) for grain size, organic carbon, loss on ignition (400°C and 800°C) and calcium carbonate, whereas the thin section was described according to Bullock et al (1985), with minor amendments (Courty et al in prep.) because of the anthropogenic nature of the deposit.

The results are presented in Tables 1 and 2, and in the Micromorphological Description. They show that the deposit is very poorly sorted, but contains much silt and fine sand derived from the Brickearth clay wall and daub material. It is also very low in organic matter and fine (< 2mm) charcoal, as indicated by organic carbon and loss on ignition. It is also low in fine calcium carbonate, although large fragments of mortar are present (Table 2).

Micromorphological examination of the deposit (Plates 2-9) showed it to be completely dominated by fragments of burned and unburned building materials. Close examination of the fabrics showed, in contrast to studies of "Dark Earth" (Macphail and Courty, 1985; Macphail, A M L R No , 1984 and in prep.), that the deposit is almost purely a little weathered spread of the destruction levels (Courty, pers. comm.). There is no evidence of re-use of the materials for hut making, or use of the deposit as an agricultural medium. Nor is there any indication of the deposit being colluvial in origin, from ploughing elsewhere. As Table 2 shows, only about 2% of the fabric has been biologically reworked. The chemistry also supports this finding.

In summary, the deposit has to be interpreted as a dumped spread of the destruction levels originating from Boudicca's burning of Colchester, and that the deposit was very little weathered prior to being buried by later Roman occupation and building.

Acknowledgements: The author wishes to acknowledge the thin section manufacturing facilities of the INA P-G (Grignon, France), and Anne Gebhardt and Stephen Carter for analytical data.

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Micromorphological Description Plates 2-9

Layer L. 1814, Culver Street, Colchester. (Plate 1). 14cms thick.

Structure: weakly massive; massive and vughy microstructure.

Porosity: extremely variable because of mix of anthrop. materials. Areas of 30% in biol. worked open Brickearth daub, medium, smooth wall vughs and very coarse chambers and fine channels; generally only 10-15%, and only 5% in "Brickearth" inclusions. Also few plant pseudomorph voids - eg up to 7mm long.

Mineral: Coarse: Fine limit 10um. A C:F ratio is rather meaningless in this type of deposit - the grain size analysis (Table 1) is only an average of all the mineral components - for example the Brickearth mainly comprises silt and clay (C:F, 75:25), with minor calcitic Brickearth of mainly claysize material with a C:F of 10-90.

Coarse: 1st coarse inclusions (see Table 3)
Common "Brickearth" wall fragments; Plates 2-4 very dominantly silty, porphyric, grano-striate with few textural pedofeatures (relic silt laminae, silt and clay intercalations, and dusty clay void in fills); very little organic matter.

Strongly burned: Plates 2-4 Brickearth is dark reddish-brown (Plane Polarised Light -PPL) and speckled; bright orange (Oblique Incident Light - OIL); and moderately birefringent (Crossed Polarised Light - XPL) - low amounts of organic matter allowing the birefringence to show through. Brickearth which has been affected by lower burning temperatures, is of a similar character, but, pale brown, speckled (PPL), pale orange, except for nodules and textural features which are orange because iron concentration (OIL), with moderately high birefringence. Very few calcareous fine Brickearth (small stone-size angular fragment), porphyric, calcitic clay with frequent silt-size quartz, very few

neo-formed calcite, and very abundant manganese, is dark grey-brown, highly speckled (PPL); yellow (OIL); highly birefringent (XPL). All these occur as angular or sub-round fragments, or as whole very large layers - and are associated with burned daub ie extending out of clay wall fabric; plaster wall coating and "Brickearth/Daub/2 which is a mixture of Brickearth with coarser elements including sand grains (see below).

Burned Daub: (Plates 5-9) These (few) are porphyric, blackish (PPL), greyish (OIL) and non-birefringent (XPL): often with coarse plant pseudomorphs; mainly medium sand-size quartz set in "non-birefringent Brickearth" fabric - without very much clay size material; and organic matter of fine fabric has been oxidised - like the pseudomorph - by burning. Burned in reducing conditions.

Brickearth/Daub: This is a very common component and varies from i) very dominant little mixed Brickearth to frequent quite dark-brownish organic fabrics. i) moderately vughy, porphyric darkish-brown, very speckled (PPL), pale orange (OIL) - therefore somewhat burned; moderate birefringence (XPL), is rather heterogeneous with sand size quartz set in silty/clay fine fabric - the latter with common textural pedofeatures (mainly unsorted intercalations (see Plates 5 and 6) and few very dusty void coatings). The fine fabric is moderately calcitic either in part from calcite ash or "weathered plaster". Also the fine fabric contains very abundant fine charcoal and charred materials included "grass" material further indicated by common phytoliths.

Ash: An ash and charcoal band some 3mm wide by 5cm wide contains mineral material, but is dominated by charcoal of all sizes and calcite crystals of wood ash - all within high temperature burned Brickearth clay wall (Plates 2-4). This probably has a structural origin ie "timber framed buildings".

Mineral material also includes very few pottery, "cement/plaster" fragments. The common presence of gravel-size, very coarse, coarse and medium sand-size quartz and flint are indicative of these materials also being imported (with Brickearth silt and clay) for temper for building materials such as opus signinium - although a high percentage of the sand and silt could be local (Macphail, AMLR, 1984) some gravel may be derived from the breakdown of a calcitic cement with coarse inclusions of gravel.

Organic: Materials such as the Brickearth clay bricks and burned daub are almost devoid of organic matter, but they sometimes feature porosity pseudomorphs of plant tempering. Few coarse charcoal are present throughout the slide. Rare bone (not human K. Dobney pers. comm.).

Fine: Even at the fine level the Brickearth is very "purely" mineral, although few fine charred organic matter and amorphous organic matter occurs in the daub type fabrics.

Groundmass: Brickearth - porphyric, speckled birefringence - the less burned the higher the birefringence. Daub-porphyric, speckled birefringence. "Weathered" daub - porphyric, speckled birefringence.

Pedofeatures: Features within the building materials which are relic or developed by their preparation for construction (such as calcite-cement fabrics and textural-daub-slated fabrics) are not described here (see mineral). Only those features pertaining to processes post-dating the deposition of this sediment are described.

Textural: Rare (not relic) impure clay (matrix material) coatings, and intercalations. Very dark-brown, poorly birefringent; slaked fines from Brickearth/daub fabrics.

Excrements: Rare faunal dissagtegation of weathered burned daub (Plates 7, 8, 9); dissagregated earthworm?

Interpretation: Careful scrutiny of this slide reveals very few pedological changes in this sediment which to all intents and purposes appears to be a spread of destruction debris. Presumably, rubble from the destruction of the Roman barracks was spread, and appears to have been little affected by later activities, probably because in this context it was sealed by tessalated floors. In short there is no evidence of cultivation, or soil formation of any kind, or even re-use of this building debris in this context.

TABLE 1 COLCHESTER: CULVER STREET (L1814) ANALYTICAL DATA

Sample Grain Size

	Clay	FZ	MZ	CZ	Silt	VFS	FS	MS	CS	VCS	Sand
L1814	10	5	7	22	32	11	10	33	9	3	66

	% Org. Carbon	% $CaCO_3$.	% Loss on ignition (400°C)	(800°C-%$CaCO_3$)
L1814	0.4	0.6	1.52	3.0

TABLE 2 CULVER STREET MICROMORPHOLOGICAL DATA

Building Materials		%
Brickearth "clay wall":	heavily burned	16
	burned	14
	unburned	13
Daub fabric:	burned	5
	unburned	7
Plaster (fine temper in calcitic fabric)		1
Mortar (coarse " " " ")		1
Charcoal:	fragments	7
	included in "clay wall"	4
Ash		2
Large Stones:	Flint	5
	Sandstone	1
	Iron Nodule	1
Coarse gravel		15
Inclusions	Pottery	1
	Bone	3
Pedologically formed fabric		
Slaked or biologically mixed daub material		4

Captions to the Plates

Plate 1. Location of thin section monolith of dark reddish-brown deposit (L. 1814) overlying burned Roman Barrack clay walls, destroyed by Boudicca in AD59.

Plate 2. Photomicrograph. Piece of completely unweathered burned brickearth clay-wall with burned wood insert (wood and clay building). Brickearth is reddened and wood now only representd by charcoal and calcitic wood ash. Plane Polarised Light (PPL), frame length is 3.35mm.

Plate 3. As 2, Crossed Polarised Light (XPL). Note silty clay fabric of the brickearth, and birefringent calcitic ash (in upper part of the "wood" insert).

Plate 4. As 2, Oblique Incident Light (OIL). Note bright burned colours.

Plate 5. Photomicrograph. Illustration of daub which shows fine material slaked by the daub-making process to produce intercalations, all of which have been reddened (not illustrated) by burning. PPL, frame length is 3.35mm.

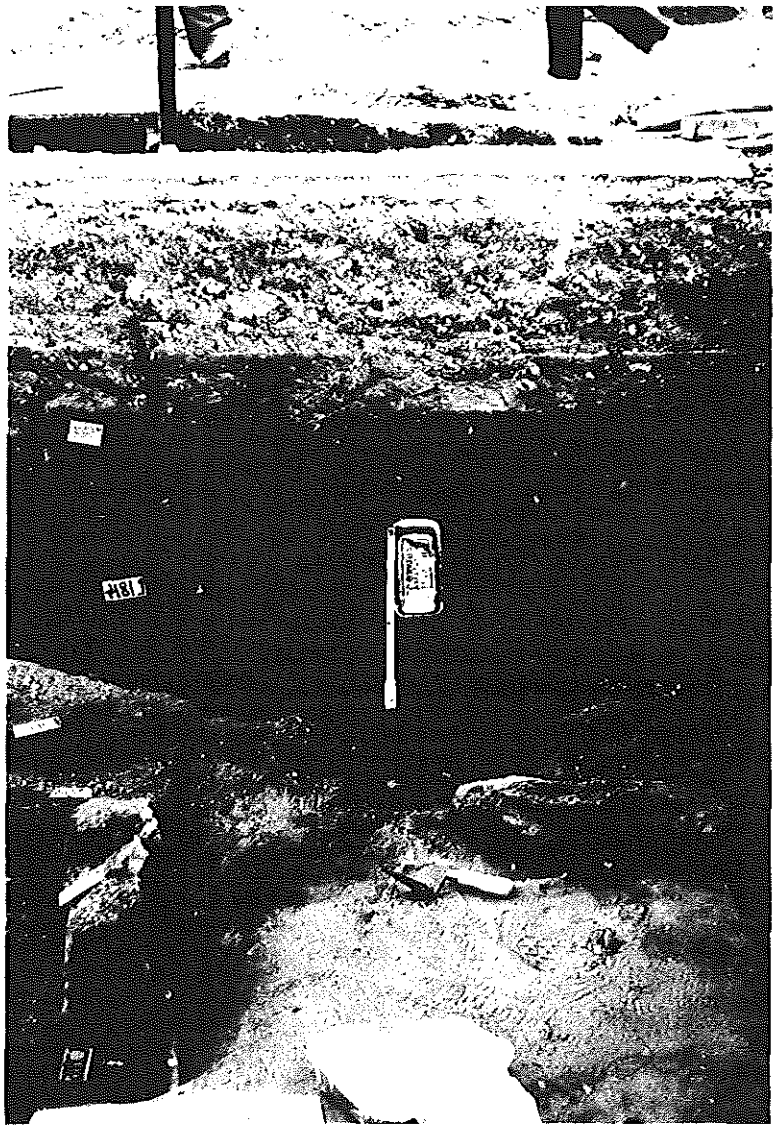
Plate 6. As 5, XPL.

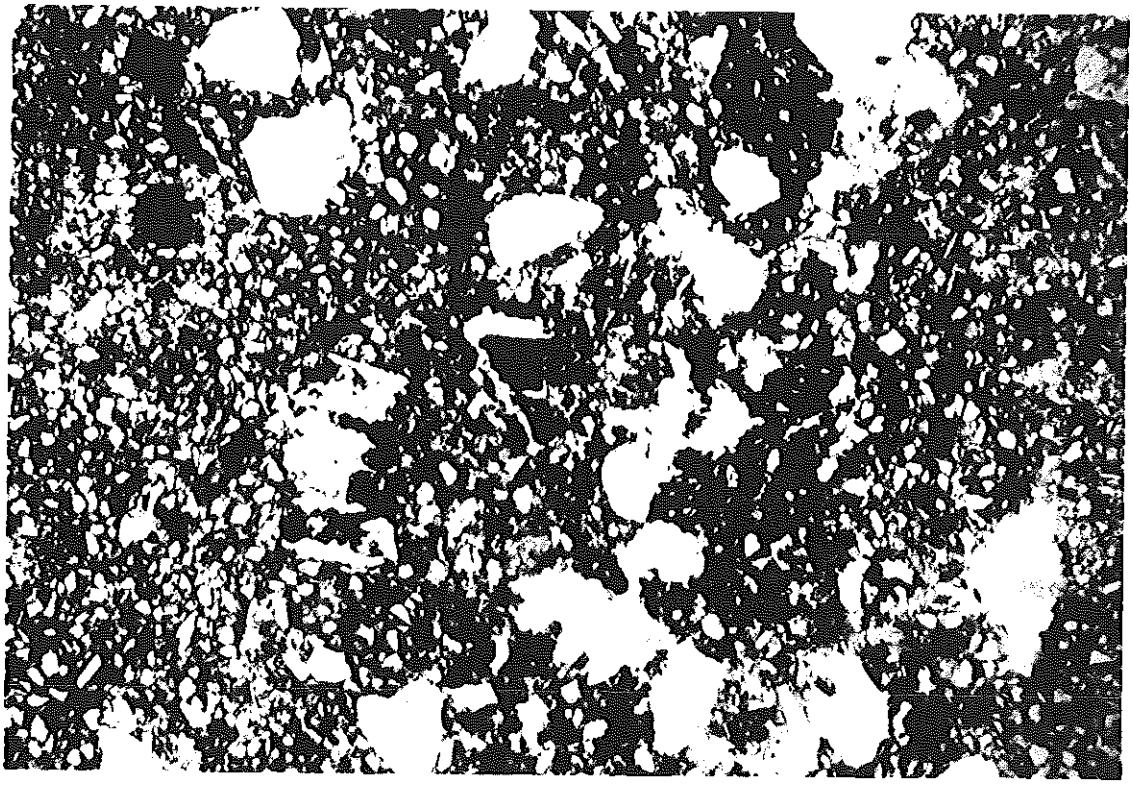
Plate 7. Photomicrograph. Illustration of minor biological activity reworking daub which has been blackened by burning, as evidenced by excremental mineral micro-aggregates. PPL, frame length is 3.35mm.

Plate 8. As 7, XPL.

Plate 9. As 7, OIL.

Plate 1. Location of thin section monolith of dark reddish-brown deposit (L. 1814) overlying burned Roman Barrack clay walls, destroyed by Boudicca in AD59.





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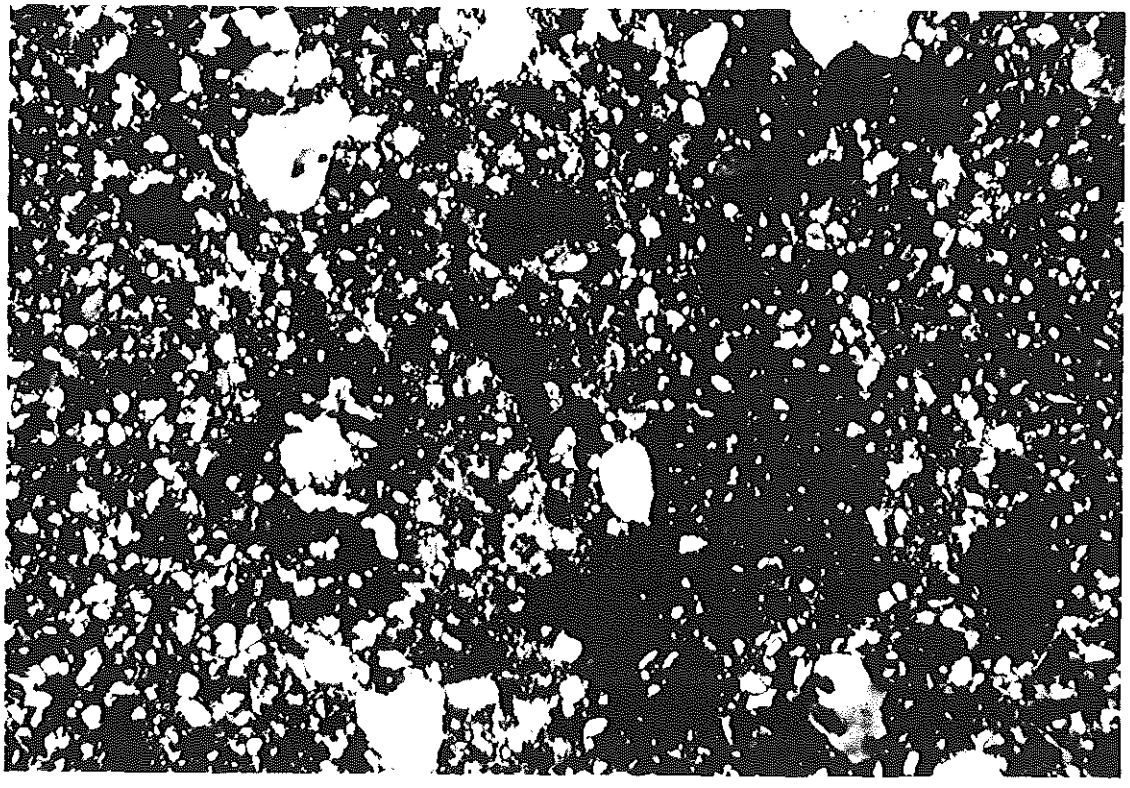

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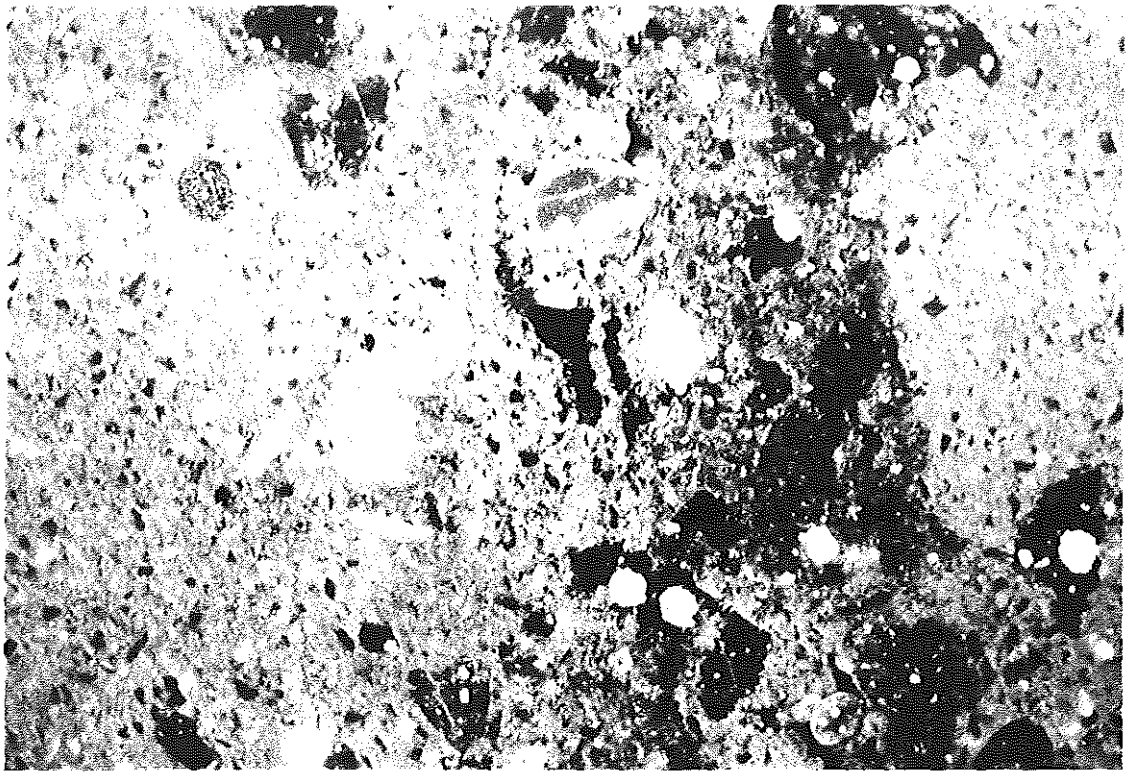
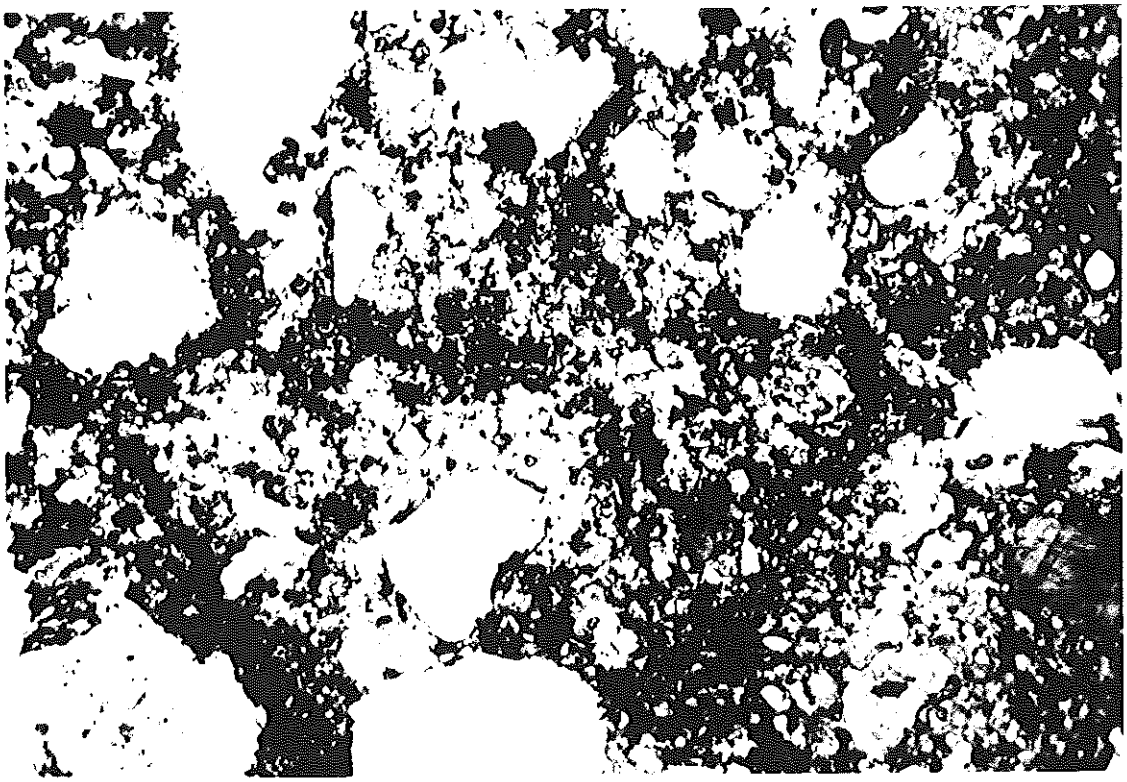


Plate 4. As 2, Oblique Incident Light (OIL). Note bright burned colours.



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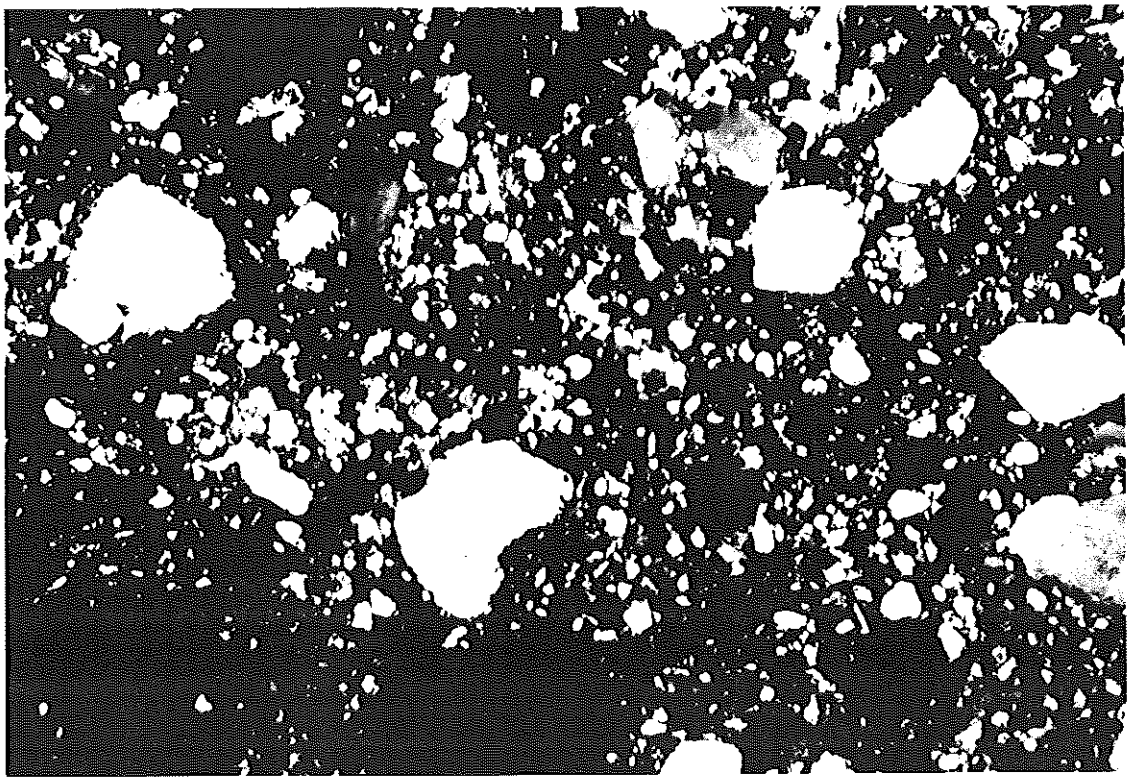

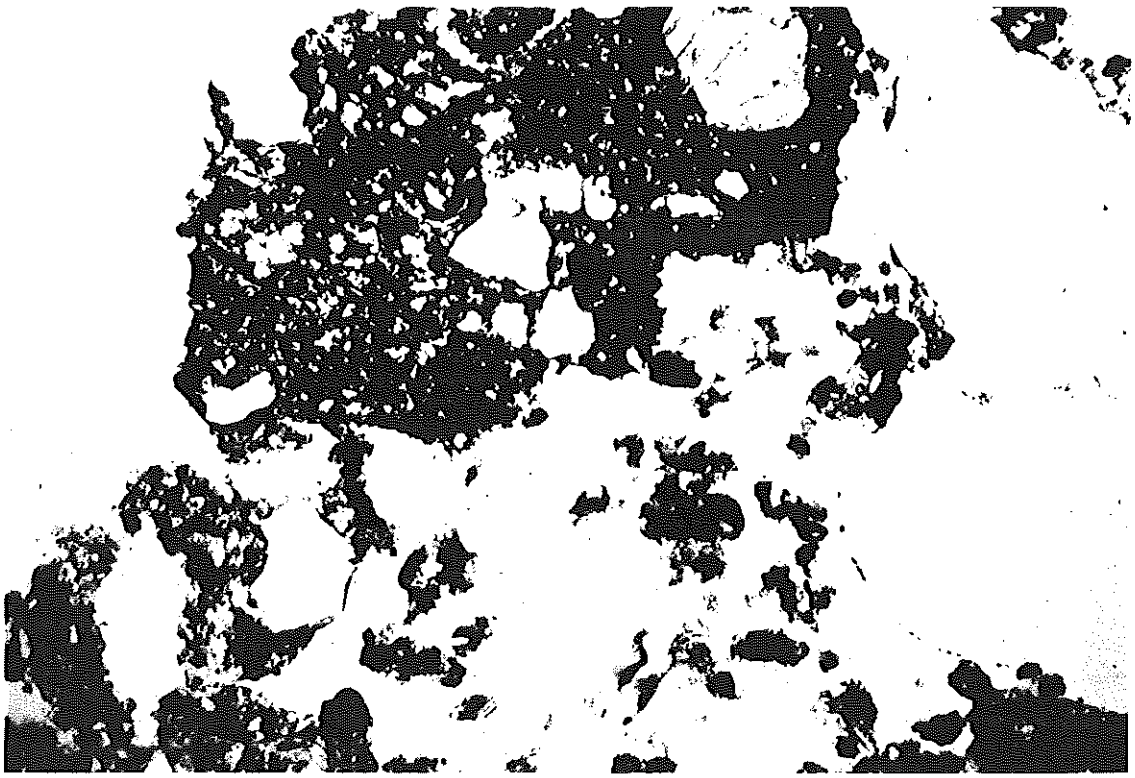

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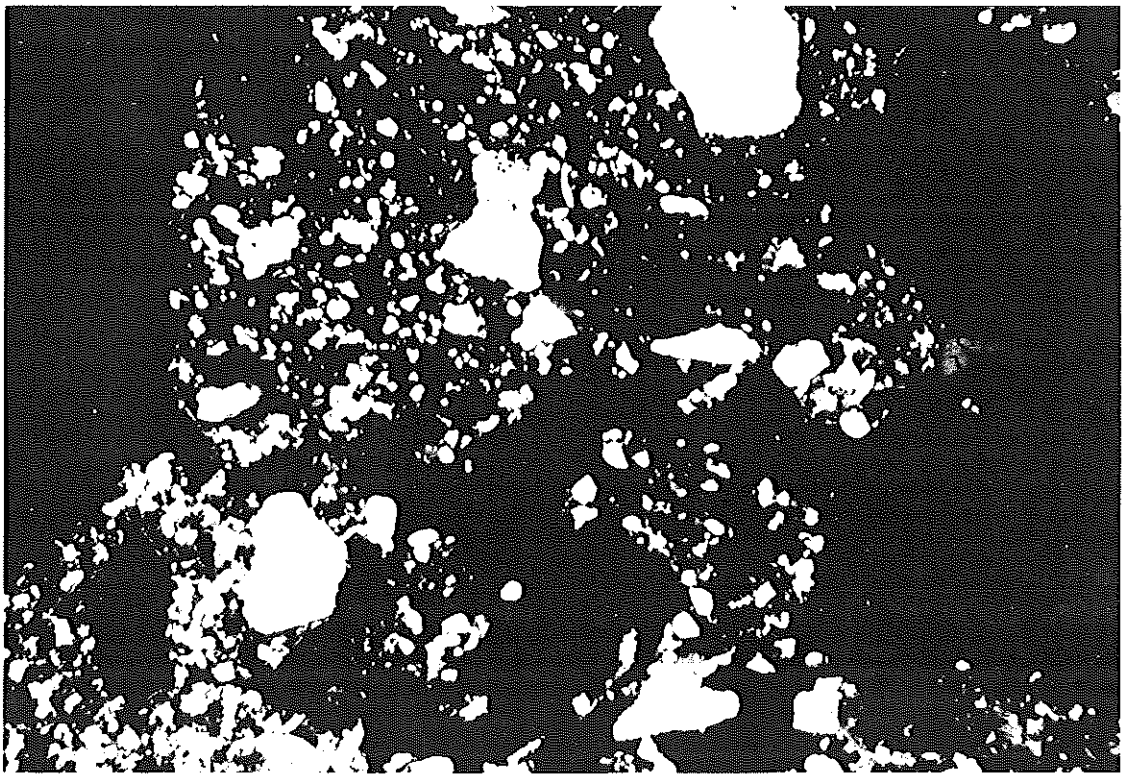

Plate 8. As 7, XPL.

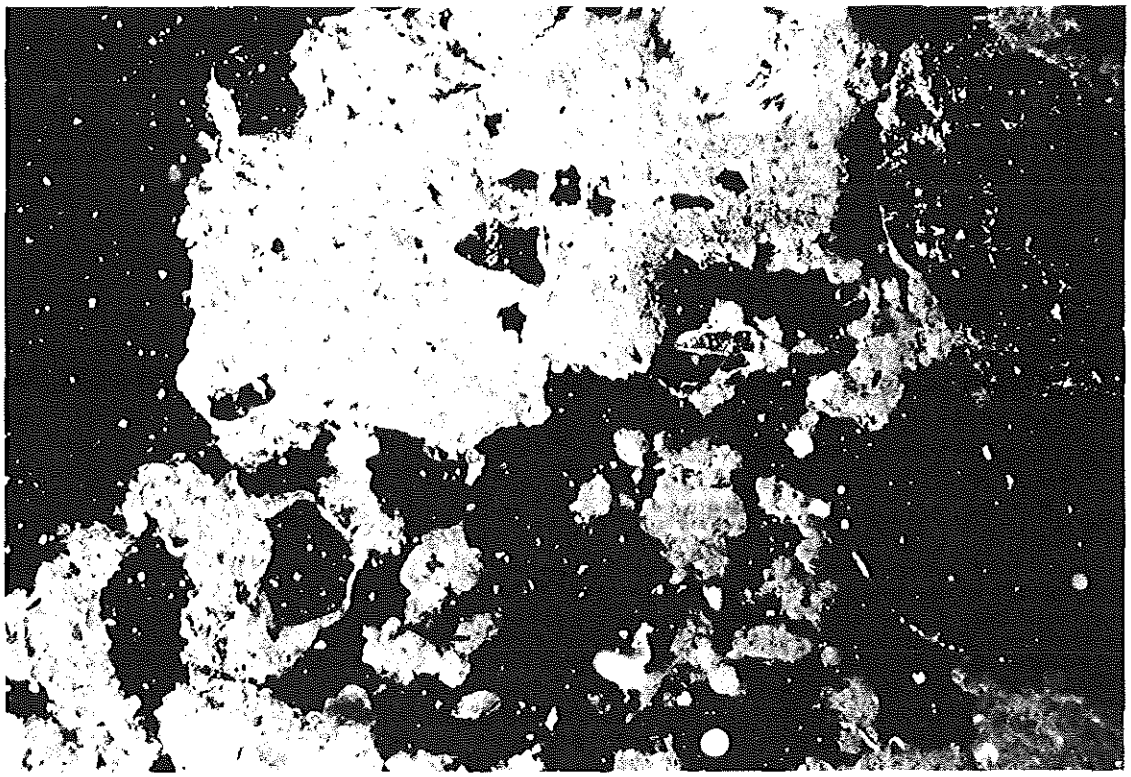

Plate 9. As 7, OIL.