FINDS OF FLINT IMPLEMENTS IN THE RED LINE TRENCHES AT COIGNEUX, 1918.

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I have been asked to explain the circumstances under which certain flint implements of the Le Moustier period were found near the trenches at Coigneux. And this with special reference to geological strata. Between the 1st April and the 14th August, 1918, Coigneux, a small village about 16 miles S.W. of Arras, lay some 6 miles behind the British front line. At the commencement of the German offensive in 1918 the ground on three sides of the village was hastily prepared for defence, and a triple line of trenches with many branches (known as the "Red Line") was constructed. At first these trenches were only about 4 feet deep, but in June and July some of them were further excavated to a total depth of 6 feet. They were never manned by the infantry, and the parapets of the trenches were never disturbed. As officer in charge of the 42nd Division Observers, I lived in the neighbourhood of Coigneux from the middle of April till the middle of August, 1918. I had, therefore ample opportunity in the intervals of military duty to inspect the excavations, especially during the period of their extension. I had already searched for flint implements in different parts of France. And in June 1918, a kind suggestion from Reginald A. Smith, Esq., F.S.A., made me pay special attention to this excavated ground.

The ground for some miles around Coigneux appears to be of similar character. The subsoil of chalk is immediately covered, not by green sand, etc., but by a stratum of dark earth, which I propose to call *Limon Brun*. (See *Lapparent*, "Traité de Géologie," Vol. III., p. 1603). This earth is of the consistency of clay; when wet it is of a chocolate colour and when dry of a dark red brown. The stratum contains a bed of large flint nodules, in this area very close and thick and in some places of considerable depth. The flint nodules generally, but not always, appear near the top of the stratum or a few inches below its upper horizon. The *Limon Brun* is in turn covered by a stratum of sandy loam or *Loess*, light red brown when wet and light brown when dry. Above this there is only turf or growing crops.

In the district round Coigneux the depths of the two strata covering the chalk vary to a considerable degree. For instance, on the north side of the Coigneux Valley the *Loess* is in places only 1 foot in depth, and the *Limon Brun* over 5 feet. But on the south side of the valley, which is the area under particular consideration here, the *Loess* varies from over 10 feet deep on the highest ground to a few inches on the outer slopes of the ridge. There were no particular means of ascertaining the depth of the *Limon Brun*, as the trenches on this side of Coigneux rarely reached down to the

chalk. But near Baussart (more to the S.E.) the *Limon Brun* lies near the surface and is there not more than 3 feet deep. The following facts may be noticed for what they are worth. Both the *Loess* and the *Limon Brun* contain in many places small white specks, like minute particles of chalk or white flint. And the *Loess*, where it is deep, has one or more thin layers of small gravel stones; but this is not a universal feature. An illustration is annexed to show the approximate strata across the Coigneux Valley.

Apart from the special implements which are being considered, the Coigneux area has produced a number of implements on the surface or just below it. These are of neolithic type and include polished celts, hammer stones, scrapers, etc.

The implements of Le Moustier culture were all found along the tops of the parapets of the "Red Line" trenches.* The parapets of the trenches were of course gradually built up by the soil thrown up out of the trench below. And as the trench became deeper the parapets became higher. So it naturally happens that when a trench has been completely excavated the soil resting on the tops of the parapets is that which has come from the bottom of the trench. This is most clearly seen when the bottom of the trench has reached the chalk. It is also very apparent when an old 4-foot trench has been further excavated into a 6 foot trench; for in this case the old soil appears hard and set and the newly excavated soil loose and wet. Had it been possible to excavate the parapets at suitable places, no doubt much greater finds of implements would have been made. But for military reasons this was quite out of the question. Only a few fragments of worked flint were found sticking in the sides of the trenches. These of course were damaged by the workmen's picks and difficult to distinguish from unworked flint which was equally broken.

Two diagrams of trenches are annexed, to illustrate the nature of the parapets and excavations.

One test then of the strata from under which these implements were excavated is afforded by the sectional view of the trench on the parapet of which they were found. The nature and depths of these strata were carefully noted at the time and recorded. But yet another test can still be applied. And the results of this second test happen to correspond very closely with the information afforded by inspection of the trenches themselves. The second test is the nature of the soil still adhering to the implements. The *Loess* is not very adhesive and washes off readily except from the small crevices in the implement. But the *Limon Brun* is sticky and difficult to remove. It is also much darker than the *Loess*. The implements therefore, except when they came entirely out of the *Loess*, still carry distinct traces of the *Limon Brun*. Traces which only a vast amount of trouble and scraping would remove.

So far then as these two tests are of value, the following general statement may be made as to the geological horizon of the finds:—

*NOTE.—Except two flakes from a similar trench on Baussart Ridge.

Above—Section of Coigneux Valley—not to scale.
 Below—Sections of Trenches—1 inch 8-ft.

(a) Some of the implements (4 of the Drift type and 1 flake) were embedded wholly, or almost wholly, in the *Limon Brun*, but only a few inches deep.

(b) The majority of the implements were lying on the upper surface of the *Limon Brun*, and bear traces of contact with that and with the covering of *Loess*.

(c) About 10 of the implements were embedded in the *Loess* at depths varying from $3\frac{1}{2}$ to 6 feet; and 2 of these (drift types) were at a depth of at least 10 feet.

The whole series, about 50 in number, 14 drift types and 36 flakes, appear to belong to a period when the drift types had almost entirely given way to the tortoise core flakes. The specimens of Drift type seem in most cases to have a close relation to the more common flaked types. e.g., the butt end of the coup de poing or of the scraper has generally a "platform" and in some cases, although both sides of the implement are chipped, one side is almost as flat as a specimen struck off a tortoise core. Even to the eyes of an untrained observer there is a closer relationship to the tortoise core flakes than to the early specimens of Chellian or Acheulian type.

The patina is mostly white, but in those specimens which came entirely out of the *Loess* it is wanting or less apparent.

And it is curious that three or four typical Levallois flakes, although coming from normal sites with white flakes, show little, if any, white patination.

Perhaps a short description of three of the actual sites where implements were found might be useful as illustrating the general nature of the finds. One of the first sites discovered ("Site A" in the illustrations) was the most prolific. This was on the parapet of a shallow trench about 3 feet deep; the interior of the trench showing 2 feet of *Loess* covering 1 foot of *Limon Brun*. For about 15 or 20 yards along the parapets there was a good sprinkling of implements, some recently broken and some whole. The find included a hand axe of the Drift type, a typical Levallois flake and a number of scrapers. These implements came from a position almost certainly below the *Loess* and whether an inch or two down in the *Limon Brun* it is difficult to say, probably not far. Except for the Levallois flake, all had a distinctly white patina.

At an elevation of 150 metres above sea-level, on the top of the ridge S.W. of Coigneux there was a trench, at first only $3\frac{1}{2}$ feet deep (Site "B" in the illustrations). On the parapets there was no sign of implements. But later on this trench was excavated another $2\frac{1}{2}$ feet. After that 4 typical specimens were found together on the parapet, having come from under 6 feet of *Loess*. Three scrapers and a small ovate implement (the latter is practically identical in every way with a Le Moustier specimen in the Victoria University Museum at Manchester, coming of course from a different place). None of the four implements exhibited the white patina.

Further along the same trench at the same elevation, a large square sump hole had been cut to take drainage water. The bottom of the sump was at least 10 feet below surface level. Here on the

parapet two specimens of the Drift type were found together, one a hand axe and the other a small spherical scraper. As the *Limon Brun* was not reached at this point it is fairly clear that these two specimens came from under about 10 feet of *Loess*. Neither had very marked white patination.

NOTES ON ILLUSTRATIONS.

Eight illustrations of implements are given to indicate the nature and variety of the forms discovered within a small area. Speaking generally the patina of the implements was more or less constant in relation to the geological levels at which they were found. Thus three implements of the Drift type which may have been associated with river gravel have a patina of porcelain white. Three others of drift type found undoubtedly at some depth in the *Limon Brun* have a patina of greenish white. Implements of whatever type coming from about the upper surface of the *Limon Brun* have a patina of creamy white or of bluish white. Implements found in the *Loess* and presumably some distance above the *Limon Brun* have generally no white patination or in some cases a very slight one.

No. I. Drift type implement found on the parapet of a six foot trench, recently further excavated from a four foot trench. At this point the strata appeared to be 5 feet of *Loess* over 1 foot of gravel. The gravel was reached at the edge of the valley south-east of Coigneux, and I only noticed it at this spot. The patina is porcelain white. The butt has a smooth platform, and a good deal of the outer crust remains. Military Map Reference J 9.d.7.3 (Sheet 57D).

No. II. (?) Drift Type implement found on the parapet of a six foot trench, recently further excavated from a four foot trench. The *Limon Brun* had not been reached, but probably at least 5 feet of *Loess* covered the implement. The patina is not white, the flint retaining its original colour, dark grey. Military Map Reference, J.15.b.8.9. (Sheet 57D).

No. III. One of two drift type implements found together on the parapet of a sump hole about 12 feet deep. This hole was on the top of the ridge between Coigneux and Bus-les-Artois, and did not reach the *Limon Brun*. The implements are stone grey in colour and have not the usual shiny white patina. Military Map Reference, J.14.c.8.6. (Sheet 57D).

No. IV. Drift type implement found on the parapet of a six foot trench recently further excavated from a four foot trench. At this point the *Limon Brun* was almost if not quite reached. The implement has the typical creamy white patina. Military Map Reference, J.8.c.7.2. (Sheet 57D).

No. V. Flake struck from a tortoise core, and possibly used as a side scraper. Found on the top of the hill on the parapet of a six foot trench. I examined this trench when only 4 foot deep, and no implements had then been thrown out. On the smooth side

NO. I

NO. II

N^o IV.

N^o III.

No. VII

No. V

No. VIII

No. VI

there is a very slight white patination, but on the worked side the flint retains its natural colour. Other flakes found under similar circumstances about the same spot showed no white patination. Military Map Reference. J.15.c.9.9. (Sheet 57D).

No. VI. A flake (? Ovate Implement) struck from a tortoise core. Found on the parapet of a six foot trench recently further excavated from a four foot trench. The *Limon Brun* though not actually reached at this point was, judging from neighbouring trenches, not far below the bottom of the trench. The implement has the creamy white patina typical of the majority of the implements found in this area. A small fragment has been broken off the butt of the implement during excavation. This shows that the original colour was dark grey. Military Map Reference, J.14.d.8.8. (Sheet 57D).

No. VII. Flake, possibly used as a double side scraper. The only white patination, which is slight, appears on the butt. Found on the parapet of a shallow trench on the north side of the Coigneux Valley. Probably 3 or 4 feet of *Loess* covered this implement. Military Map Reference, J.3.b.8.0. (Sheet 57D).

No. VIII. Flake (ovate implement) found on the parapet of a trench about $3\frac{1}{2}$ feet deep. At this point the *Limon Brun* was not reached. The patina is not white. A somewhat similar flake was found under 5 or 6 feet of *Loess*, and in this case also the flake retained its natural colour. Military Map Reference, J.8.c.7.3. (Sheet 57D).