on the mine site and ground elsewhere. At Spiennes in Belgium, however, celts were chipped and afterwards ground on the site on which the flint was mined. The form of many of the implements recalls those from Aurignac sites, as I have already noticed in my previous paper. Five of the cones figured from Corunba del Bortin (Corrèze) can be matched on a larger scale from Peppard, as well as some fourteen other types. Resemblances to the Brassempouy site I have also referred to. The work at Peppard is coarser and less regular on account of the quality of the flint used, but the Aurignac tradition seems to have guided the form of the pieces. Dr. Sturge has suggested the whole culture belongs to the latest Palæolithic age after Madeleine; this is in accordance with evidence possessed by M. Breuil, who believes there was a recrudescence of Aurignac types at the end of the Cave period.

The problems at Peppard are the same as those at Cissbury and Grime's Graves, and we must hope that the excavations at the latter place in the spring will throw further light on them, and enable us to place the whole culture in its proper chronological position.

I am indebted to Miss K. Ames for help in compiling the notes for this paper, and to Mr. E. T. Lingwood, who kindly executed the drawings of the implements illustrated. The latter are half natural size.

SOME IMPLEMENTS OF "CISSBURY TYPE" FOUND IN NORFOLK.

BY J. S. WARBURTON.

Read at Norwich, December 8th, 1913.

Grimes' Graves and the peculiar type of implements associated with them being very much discussed at the present time, our Hon. Sec. has invited me, as the finder of a good many of these implements, to give a short paper describing them and some details of the localities.

My first two visits to the "Graves" were practically fruitless as far as implements were concerned. However, I stumbled across the pit excavated by Canon Greenwell and brought back a large bone from the débris surrounding it. Subsequent visits showed the best place to search was on the arable land. Every year since then, by the kindness of the agent for the Weeting Estate, I have been enabled to spend several days searching, and have brought away some heavy loads of spoil.

It is, I think, unnecessary to describe this site, but I should like to refer to the "13 feet of sand" mentioned by Canon Greenwell, which Mr. Reginald A. Smith, F.S.A., considers to have been deposited since the pits were sunk. As Mr. Clarke

points out (Part III., p. 339), this is quite improbable. What I believe to be the truth of the matter is that the sand varies very greatly in depth over the locality. This I know to be the case with my own land at Northwold, similar soil and subsoil, $6\frac{1}{2}$ miles N.W. of the Graves. The sand there is very deep in places, many feet, but in others the plough will touch the chalk, and this I feel sure is the same at Grime's Graves. A few yards from the edge of the wood on the arable land there is a large patch quite white and chalky, and I feel certain that the top soil is not more than a few inches deep there. This would reconcile Mr. Smith's objection to the improbability of the early miners having discovered the existence of flint-bearing chalk when covered by 13 feet of sand. I have noticed that on this chalky patch implements are much scarcer than on other portions of the field; and the same fact applies to other sites I know.

I presume the makers of the articles preferred the sandy and drier places for their habitations, and the implements lie where they made and used them. Whether the fact of flints lying on chalky soil has anything to do with the depth of patination is I suppose one of the vexed questions connected with the subject, but my many searches here have proved conclusively that the majority of *blue* patinated implements are found on the south side of the breck where the soil is entirely sandy; the nearer to the chalky side the fewer they are.

The implements found at the Graves have all been picked up close to the wood where the pits are situated, with the exception of one, which was found at the side of the excavated pit by a friend. They consist of the following varieties:—

PICKS.—These are of three kinds: Hammer picks as described by Dr. Plowright (p. 257, Vol V., Trans. Norfolk and Norwich Nat. Soc.), of which I have five, the longest $6\frac{3}{4}$ -in. by 2-in. They are pointed at one end and thick at the other. Another variety is pointed at both ends, and may be called boat-shaped; of these I have also five, varying from 4 to 5 ins. long. The other sort is longer in proportion to thickness and varies from $6\frac{1}{2}$ -in. to 4-in. long. I possess 17 of these. Mr. R. A. Smith, F.S.A., describes one of the latter, which I submitted to him, as "rough and unsymmetrical, but in all essential points a 'Thames pick' called by the French after Campigny."

SEGMENTAL TOOLS.—These are fairly abundant, and the opinion of Mr. R. A. Smith on them generally is, that they are "fairly typical though rough"; one at least is a good "tea-cosy" and will stand up, with natural crust on base. Another is similar in outline to the one found in the Coombe Rock at Northfleet (Plate CIX., Fig. 4). I may count perhaps 15 as coming under thishead, though all have not flat bases.

END CHOPPERS OR DIGGERS.—These are tools of a wedge shape, with cutting edge at the end and partly up the sides; the eight I possess are much the same as described by Dr. Plowright, and vary in weight from $\frac{1}{2}$ -lb. to nearly 2 lbs., and in size from

$3\frac{1}{2}$ -in. by 3-in. up to $5\frac{1}{2}$ -in. by 4-in ; one is chipped from a nodule. I have only one at all resembling Fig. 11 in Dr. Plowright's article, though nothing like so good a specimen ; it is $4\frac{3}{4}$ -in. in length and tapers from $3\frac{3}{4}$ -in. at the butt to $1\frac{3}{4}$ -in. at cutting edge. The best is shown on Plate CVIII., Fig. 1.

SIDE CHOPPERS.—Of the seven specimens of these the largest weighs 3 lbs., with thick back, $7\frac{3}{4}$ -in. by 4-in. by $2\frac{1}{2}$ -in., the smallest $\frac{1}{2}$ -lb., $4\frac{1}{2}$ -in. by $2\frac{3}{4}$ -in. by $1\frac{1}{4}$ -in. Two of them are much like the hand-axe or coup-de-poing of the late Drift period ; all are of rough workmanship, but have a family resemblance, and would make useful tools for excavating in the absence of better.

AXES.—Of these I have a considerable number, but no first-class specimens. This is not perhaps to be wondered at, as the site had been under observation for many years before I heard of it, and axes are at once recognized, even by the labourers who take no notice of the rough implements. My largest specimen weighs just under 3 lbs., and measures 8-in. by 4-in., by $1\frac{3}{4}$ -in., tapering slightly from butt to cutting edge ; it was not found at the Graves, but at Weeting Park, where, with other flints gathered off the land, it had been built into an old wall ; it is, however, undoubtedly a Cissbury axe from the Graves ; chipping and patination are identical. From this giant they graduate downwards to one 4-in. by $1\frac{1}{4}$ -in., weighing but an ounce or two, but with a perfectly chipped cutting edge. Two of the best are shown on Plate CIX. Another Mr. Smith tells me suggests a type found at Peppard, by Dr. Peake, somewhat resembling a dolphin ; it is evidently made from a curved flake and most of the chipping is on one side. (Plate CIX., Fig. 3.)

CARINATED PLANES.—There are five specimens which I think I may fairly claim to be of this type, though none is quite perfect. The bases are in all cases not sufficiently flat, though the upper surfaces are near to type.

PRISMATIC TOOLS.—These I always thought were the broken butt ends of small axes, but find they are considered to be perfect tools, associated especially with Aurignac. Some ten in all are included in my finds. The average length is about $3\frac{1}{2}$ -in. All are of a triangular section tapering to a point, curved, chipped on two sides, and most of them appear somewhat battered on the edges.

SCRAPERS.—Of 49 of these, 17 may be classed as of the long variety, inasmuch that their length exceeds their breadth ; but of the true Cave type of double-ended long scraper as shown on pp. 46 and 47 of the Stone Age Guide, Second Edition, I have not yet found a specimen. Two are square-ended ; steep edging is found on 13. One is an especially fine specimen, measuring 4-in. by $3\frac{3}{4}$ -in. and proportionately thick ; Mr. R. A. Smith, F.S.A., says of this : "I cannot believe this is Neolithic ; rather Le Moustier." (Plate CVIII., Fig. 4.) The majority come under the round classification, but are very different from the ordinary Neolithic round scrapers ; much larger and of very rough workmanship.

Several are worked to an edge at the bulb end, which I have very rarely noticed on a Neolith—in fact I know of only one and that is double-ended.

HOLLOW SCRAPERS.—These are not so plentiful as the previous tools, and are similar to the ordinary Neolithic kind, excepting that they also are generally larger and rougher. The semi-circular working parts vary in the 11 I have, from $\frac{1}{2}$ -in. to $1\frac{1}{4}$ -in. in width. One has had the gap chipped at a date subsequent to the flake being struck; the chipping is a blue colour, while the flake is a thick porcellaneous white.

FLAKE KNIVES.—These are abundant in several shapes, some with thick backs; most have a certain amount of secondary chipping. Two submitted to Mr. R. A. Smith, F.S.A., are thought by him to be *possibly* predecessors of Early Solutré.

BORERS.—Like all the other implements from this site these vary very much in size; of 13, the largest is 7-in. in length, a large and heavy tool (Plate CVII., Fig. 2), which might have been intended for the purpose suggested by Dr. Plowright, namely, boring holes in the chalk to loosen the soil when excavating; however that may be, it appears to have seen service in some capacity, and judging by the differences in colour of the patination of the business end, it has been in use at different periods. The smallest borer is only $2\frac{1}{2}$ -in. long and quite Neolithic in type though patinated quite white.

CIRCULAR IMPLEMENTS.—I find it necessary to divide these into two classes; (a) large, rough, *thick* implements, resembling very much Fig. 16 on p. 25 of Stone Age Guide, from Santon Downham (Drift), which is not far from Grime's Graves. Of this kind I have 10 examples; of one specimen Mr. Smith says, "Another that cannot be Neolithic." (Plate CVIII., Fig. 3.) The other sort is of a much finer description, thinner and showing better work altogether. Of these I possess only two; one is perfect, $3\frac{3}{8}$ -in. by $3\frac{1}{8}$ -in. by $\frac{1}{2}$ -in., and was found at the side of the historic pit, excavated in 1870. (Plate CVII., Fig. 2.) It is a beautiful specimen, chipped all over and patinated a dark blue on one side and lighter blue on the other. The other is not, and I think never was, a perfect circle; if it had been, it would have measured some 7-ins. in diameter, which seems improbable. It is now practically a quadrant, and when made and perfect was, I should say, of a measurement of about 100° on the arc; a piece from one corner is apparently missing. It is most beautifully chipped on both sides, as well as on the curved edge.

LARGE FLAKES.—As is well known, the flakes from this site are very large; 8 are all I have brought away; they are:— $8\frac{3}{4}$ -in. by 3-in., $5\frac{1}{2}$ -in. by $4\frac{1}{4}$ -in., $6\frac{1}{4}$ -in. by 3-in., 5-in. by $4\frac{1}{2}$ -in., $5\frac{1}{2}$ -in. by $3\frac{1}{4}$ -in., $5\frac{1}{2}$ -in. by 3-in. (broken as to length), $4\frac{1}{4}$ -in. by $3\frac{1}{4}$ -in., 4-in. by $3\frac{1}{4}$ -in. Most are of considerable thickness, and heavy blows and much skill must have been necessary to produce them.

HAMMERSTONES.—Of these I have 9, all of flint; those found by Canon Greenwell are stated to have been quartzite; I have

never yet come across one in this material. Four appear to be natural nodules; the others, either cores utilised for the purpose or roughly chipped to an approximately globular form; all are much abraded and quite white. As might be expected, the average size is larger than those found on Neolithic sites.

CORES.—These are plentiful, but heavy, and I have only brought away specially good specimens. Only a small percentage of the implements are of a bluish patina, and very little iron moulding is visible. The last fact I attribute to two causes: the land being of a waste and sandy description has been cultivated for only a comparatively short period, the game alone making it worth while; consequently the stones have not been turned over by the plough so often as on better land which has been under cultivation from time immemorial. Then again, on many of the implements the soft deep patina is itself abraded by the ploughshare; some have a deep groove scored across them (a large end chopper shows this well), so that instead of the flints scraping the iron off the plough, it is the other way about in most cases. I am a firm believer in iron moulding on implements *from the surface* being caused chiefly by agricultural operations. I work on the land myself, and have seen it occur with the plough. I think a very good proof of this is to be seen in Dr. Sturge's museum. Of the thousands of drift implements there shown, the characteristic marks seen on Neolithic implements are absent. On a small collection of the same implements which have been found *on the surface* of the fields, however, iron moulding of the ordinary type is abundant.

Of other sites in this neighbourhood yielding implements of Cissbury type, those at present known to me are:—Cranwich, Weeting, Methwold (3 sites), Northwold and Hockwold, at all of which Neoliths are found mixed with them. The implements with thick white patina are, however, found only in any numbers at the first two places, which are both close to Grime's Graves.

CRANWICH.—The surface soil is all very sandy, sub-soil chalk, and the early inhabitants must have had a long way to go for water, the nearest stream being the River Wissey at Mundford; this, although only half-a-mile from Cranwich village itself, is nearly two miles from the part of the estate where the great majority of implements have been found. Possibly they relied on dew-ponds, a modern one made a few years ago being a success. Certainly the site must have been occupied over a long series of years and by a large population, judging by the great number and variety of the implements which have been picked up, including those of Drift type, Cissbury, Neolithic, and some very fine Bronze Age weapons.

Of 56 white patinated scrapers from here, I find 8 are steep edged, 18 are of the long kind, the majority are round, and excepting for the thick white patina are like the black and blue Neoliths from the same place. The work on them is also much

better than on those found at Grime's Graves, and they appear to me to belong to a somewhat later period.

AXES.—Several different types appear to be represented in these; one Mr. R. A. Smith tells me "has every chance of being a Palæolithic hand axe (subtriangular late). Two others possess a kitchen midden feature in that they have transverse flaking at ends." Another, "related to St. Acheul II., but exact date at present uncertain."

PRISMATIC TOOLS.—These are represented by some half-dozen specimens, and I am told they "closely resemble those of Aurignac date."

WAISTED TOOLS.—Of these I have 5. Dorsetshire seems to be the place where they are found in numbers. Mr. Smith says "at present undateable."

WEETING.—Implements are picked up on practically all parts of the Weeting Estate, which extends over nearly 10,000 acres. After Grime's Graves I think the fields in the immediate neighbourhood of Mount Ephraim are the most prolific, certainly they are so as regards Neoliths. Most of the white patinated implements I am in possession of come from the "Long Breck," which is close by. The implements are practically the same as on the Cranwich site, which adjoins this land; the soil and subsoil being similar in character. Two steep edged scrapers and the two best Cissbury type axes I have from this place are exhibited; also another tool which is almost a "tea-cosy."

NORTHWOLD.—The site from which I have picked up the bulk of the implements from this place is on light land inclining to sandy, subsoil chalk; close by runs a stream called Methwold Lode on the map, which in times gone by has in places spread out into much greater width, judging by the difference in level of some of the land along parts of its course. The portion most productive lies about 200 yds. away from the present stream, and is about 15-ft. above O.D., with a gentle slope to the south. This I find to be a feature of all the sites I have discovered in this part, so that now I never look for anything on a slope facing north; nothing is to be found on them. I have most kinds of Neolithic forms from here but only two of Cissbury type; a small axe and what may have been a chisel. Of 99 scrapers, 13 are steep ended, 8 of the long variety. A curious feature is the large number of "button" scrapers; I have no less than 78 from this site, which extends (as far as I am able to search) to about 2½ acres. White and bluish patination is universal on all articles here, and I have a considerable number; the only black lusted article is a good fabricator.

METHWOLD.—The first site on which I found implements in this parish is situated at one mile from the village, at the Hythe, which is an outlying hamlet. It is on the highest ground in the immediate vicinity (50 ft. O.D.) and just on the border of the Fens. The soil is of a rather stiffer nature than other sites here, but would not be called heavy land, subsoil chalk. The area I

have investigated comprises about 3 acres, and a large number of Neoliths have rewarded me; scrapers chiefly, borers, hollow scrapers, hammer stones and several rough points which may be arrowheads. All appear to belong to an early type, rough work and white patination on all. Earlier cultures are represented by a single white patinated scraper of rather large size in the Cissbury style, and an implement of Drift type, resembling a coup-de-poing or hand axe. This I am told by Mr. R. A. Smith would be accepted as Palæolithic if stained. Of 93 scrapers from this site, 12 are steep edged, 13 of the long form.

I have recognized two other sites in this parish yielding chipped flints, a proportion of which exhibit "Cave" tendencies. They are both on sandy soil with chalk subsoil, one at a distance of one mile east of the village, the other about 200 yards to the south; both gentle southern slopes, highest elevation 50 ft. O.D. The one farthest away is close to the spring which is the source of the Methwold Lode previously mentioned; and this stream would be also the nearest water to the other site. Up to the present I have not had many opportunities of searching the nearer site, and have found but few implements. Two, however, are of ancient type—a small Cissbury axe, and an article which Mr. R. A. Smith tells me is "strongly suggestive of a hand axe which (we are told by the French authorities) is not later than Aurignac." From the other site, on which I have spent a considerable time, I have many interesting articles. Out of 64 scrapers 10 are steep edged in the Aurignac style; 12 are long variety. Other implements are cones, somewhat in the Tarté style; a rather poor specimen of the carinated plane; a very small hand axe; a beak-shaped implement, somewhat resembling the "bec-de-perroquet" of the French caves; a small implement showing vertical chipping all round, which Mr. R. A. Smith says "may be a freak," but larger specimens are found in France (Les Eyzies cave), the upper crust, as on this, being a constant feature. The only other I have is chipped in a peculiar style, somewhat similar, I am told, to the Peppard culture.

HOCKWOLD-CUM-WILTON.—This is a site I only discovered late last summer, and have paid only two visits. It is situated on a gentle slope on the north bank of the Little Ouse, about $\frac{1}{2}$ -mile from the river, just to the west of the Devil's Dyke, which here crosses the road. Soil sandy. Scrapers and hammer stones are pretty much all I have seen at present; one of the former is quite a typical cave implement.

Reporting upon specimens from the last four sites, Mr. R. A. Smith, F.S.A., says "I think you have undoubted traces of Palæolithic cave man."

July, 1914.—Since the above paper was written I have found other cave type implements. On the Northwold site I obtained a small but perfectly shaped "tea cosy," 2-in. by $1\frac{1}{4}$ -in. by $1\frac{1}{8}$ in. thick, with flat cortical base. From the last-described Methwold site (part of the original Methwold Warren), a prismatic tool;

three "*dos rabattu*" knives; half-a-dozen hand axes of varying excellence, a neatly worked implement $2\frac{1}{2}$ -in. by $1\frac{1}{8}$ -in. by $\frac{1}{2}$ -in. thick, chipped on both sides with edge all round and semi-circular ends, thick white patina, resembling a small celt of Cissbury type; a "tea cosy" with good flat base; two well chipped implements very similar in shape to the "*racloir*" of Le Moustier, but worked on both sides; five leaf-shaped points, probably arrow-heads, three perfect, all patinated white or bluish white, probably belonging to a very early culture. Lastly, an additional 48 scrapers, making 112 in all, chiefly round, but a few showing cave tendencies. I consider this a most prolific site, and by no means exhausted. It must have been occupied for a considerable period, as I have found more than 30 hammer-stones.

AN EARLY NORFOLK TRACKWAY: THE "DROVE" ROAD.

BY W. G. CLARKE AND H. DIXON HEWITT, F.I.C.

Read at Norwich, January 26th, 1914.

It is difficult to prove that a road is prehistoric—in many cases more difficult to prove that it is not—but the fourteen miles of the Norfolk "Drove," "Drovedway," or "Harling Drove," which connects the fenland at Blackdike, Hockwold, with Peddar's Way on Roudham Heath, have certain claims to that distinction. Though not so well known as the Northumberland "Drove Way" or the Surrey "Drove Road," and probably a favourite route in mediæval times for flocks and herds to and from the fens, its origin must be sought in a much more remote period, and as for the greater part of its course its primitive condition is still retained, it is easy—possibly with the mental elimination of all trees from the landscape—to picture it as it was in its early days.

FROM END TO END.

The direction of the "Drove" is East and West, and its termini are in the same latitude, though in order to reach Fowlmere it takes a long northern sweep from Bromehill, and at New Buildings, Croxton, is a mile to the northward of a straight line connecting its ends. At Blackdike it is 13 feet above O.D., rising to 62 feet north-west of Fengate Farm, and falling to 23 feet at the western foot of Bromehill. The top of the hill is 105 feet above O.D., and the bottom of the eastern slope 46·7 feet. The Drove then ascends to 124 feet at Santon Square, 129 feet on West Tofts Heath, 143 feet midway between New Buildings and Fowlmere, and 140 feet in the middle of Thorpe Great Heath, whence it gradually falls to 92 feet at its junction with Peddar's Way.

Plate CVII.

Implements from Canon Greenwell's Pit, Grime's Graves. On the left in Mr. E. T. Lingwood's Collection; on the right in Mr. J. S. Warburton's collection.

Implements from Grime's Graves, Weeting.

Plate CIX.

Implements from Grime's Graves, Weeting.

Views on the "Drove" Road.

Photos : H. Dixon Hewitt.