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GEOLOGICAL AND ETHNOLOGICAL OBSERVATIONS  
MADE IN THE VALLEY OF THE WOLLONDILLY RIVER,  
AT ITS JUNCTION WITH THE NATTAI RIVER,  
COUNTIES CAMDEN AND WESTMORELAND.

By R. ETHERIDGE, JUNR., Palæontologist.

[Plates XII., XIII.]

THE following observations were made during a short visit, in company with Mr. W. A. Cuneo, Station-master at Thirlmere, to the junction of the Wollondilly and Nattai Rivers, to further examine some interesting phenomena noticed during a previous visit by the latter gentleman. The localities in question form a portion of the district of Burragorang, "a local name for that part of the Wollondilly valley which occurs between the junction of the Nattai and the Cox with the former river."\*

The Wollondilly Gorge is about twenty miles from Thirlmere, and the descent into the valley commences at the highest point of the route, known as "The Mountain," or in the Aboriginal language as Queahgong. This point is 1,900 feet above sea-level (approximately)† and the descent, by a magnificently engineered although most costly zig-zag road, is very rapid and steep; and the river being itself only about one hundred and fifty feet above the sea, this allows of a fall on the road of at least 1,700 feet. Queahgong, as the crow flies, is only one and a quarter miles from the Nattai junction.

Both the Wollondilly and the Nattai have cut deep gorges through the Hawkesbury Sandstone, into the Coal-measures and Upper Marine beds of the Premo-Carboniferous beneath it. The Hawkesbury Sandstone forms a perpendicular face of rock, a sharp escarpment in fact, whilst the united Coal-measures and Upper Marine present a fine slope down to the alluvial flats, in places bordering the river. By the combination of these

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\*W. B. Clarke, *Quart. Journ. Geol. Soc.*, 1866, xxii., p. 443.

†The late Rev. W. B. Clarke gave the height of the highest point in his section of Burragorang as 1,996 feet, but I do not think it was taken exactly at this spot. (See *Sed. Form. N. S. Wales*, 4th edit., 1878, 2nd section).

geological formations, and the effects of the elements upon them, some of the boldest and most picturesque scenery in New South Wales is produced, rivalling even that of the Blue Mountains. At this point the gorge from escarpment to escarpment is not more than two miles wide, if it amounts to that. Particularly grand is the view, when the visitor, standing on any of the upper sharp turns of the road, looks up the valleys of the Wollondilly and Nattai above the junction; and probably one of the grandest outlines of the whole is that of the huge hill,\* which frowns over the point of union of the two rivers.

During the descent of the Queahgong road, and during the ascent a few days later, I endeavoured to trace a junction line between the Hawkesbury Sandstone and Coal-measures, in connection with the unconformity believed to exist between the two, but the base of the scarp is so piled with huge blocks, and covered with *débris*, and dense vegetation, that no clear section can be seen. The same difficulty seems to have impeded the Rev. W. B. Clarke, years ago, when he explored this valley, for he remarks: "At the base of the Hawkesbury rocks, blocks fallen and accumulated so as to hide the junction. Dense vines, fig-trees, ferns and jungle, with pools of water." About nine hundred to 1,000 feet down, or from seven to eight hundred feet above the river, shales make their appearance, interbedded with quartz conglomerates of the Hawkesbury Sandstone. Shales continue until about 1,300 or 1,400 feet have been reached on the descent, and it is somewhere between the two points indicated that the actual junction takes place.

The Hawkesbury Sandstone consists of a coarse sandstone, yellow, red, or of purplish tints in colour, becoming very pebbly and conglomeritic towards the base. The bedding is practically horizontal, and the joints are numerous, causing displacements in large masses of rock.

The first coal seam is met with at from 1,300 to 1,400 feet below the summit, or about three to four hundred feet above the river, at no great distance from the junction of the two series of rocks. In Clarke's section the uppermost coal seam is given as at about nine hundred and fifty feet above sea level, or seven hundred and fifty feet above the Wollondilly. Mr. Cuneo has obtained *Glossopteris* in these measures.

The only published information with which I am acquainted relating to this particular portion of Burragorang, besides Clarke's "Section" already referred to, is a paper by the same Author

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\* I may here remark on the paucity of names attached to such grand physical features in many districts, particularly the present one, and how conducive to exact physical and geographical description some well-devised scheme of nomenclature would be.

“On the Occurrence and Geological Position of Oil-bearing Deposits in New South Wales.”\* In this essay Clarke correctly indicated the position of the Upper Marine beds at the bottom of the section, and remarked on their resemblance to the Muree Series of the Hunter River Coal-field, and on their supporting “a series of coal-measures, which are capped by Hawkesbury rocks, all resting apparently in a nearly horizontal position on each other.”† This horizontality is very remarkable, and a most noticeable feature, and renders it still more difficult to determine the supposed unconformability, although its position may possibly be marked by the occurrence of springs. At the same time Clarke mentions that at the immediate junction of the Nattai and Wollondilly, the lowest beds (Upper Marine) are seen dipping slightly to the west. The highest elevation attained by the Upper Marine beds is five hundred feet he says, opposite the mouth of the Nattai; and this is above sea-level, not above the level of the river bed. On the Mount Queahgong section these beds seem to attain a rather higher level, in fact on the eastern side of the gorge the strata all appear to occupy a somewhat higher position.

Spirifers and *Stenopora*, according to Clarke, occur in the Marine beds, but I was not able to visit the fossiliferous spots through want of time. At Singleton, however, on the Hunter River, *Stenopora* occurs in rounded bomb-like calcareous nodules. Now, in the Upper Marine beds, behind Queahgong House (Mr. Maurice Hayes'), on the western bank of the Wollondilly, heavy nodules of a calcareous sandstone occur, resembling cannon-balls, having nuclei of calcareous matter, but not *Stenopora*, or other fossils, so far as I saw; otherwise the resemblance to the Singleton nodules is very strong. Lines of pebbles are also seen in these beds, and at times solitary pebbles occur in the ball-like segregations, although not necessarily central.

No intrusions of igneous matter, as described by Clarke higher up the Nattai Valley, and by the late Mr. C. S. Wilkinson near Mittagong, ‡ in a similar series of rocks, were observed.

Kerosene Shale has been found at several places in the valley in the Upper Coal-measures, but has not been worked successfully so far.

The Rev. W. B. Clarke, speaking generally of this magnificent valley, says “Nothing can so clearly mark the origin of the deep ravines by continuous washings and erosions (probably after some dynamical action had fissured the country), as the fallen blocks of the plateau, and the pebbles which cover the face of the country

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\* Quart. Journ. Geol. Soc., 1866, xxii., pp. 439-448.

† *Ibid.*, p. 443.

‡ Ann. Report Dept. Mines N.S. Wales for 1881 [1882], p. 141.

in the line of drainage.”\* May it not be possible that the starting point of the Burratorang Valley was some great earth-movement, possibly connected with the great faultings which “probably took place towards the close of the Tertiary epoch,”† one of which, known as the Lapstone Hill fault, assisted in the formation of the abrupt eastern margin of the Blue Mountains?

With regard to more recent deposits, many of the gullies running up through the Upper Marine beds, and the Coal-measures, exhibit small waterfalls, around which are deposited considerable masses of calcareous tufa.

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The Aborigines of the Wollondilly and Nattai Valleys, must, from local accounts, have existed in considerable numbers, and are now only represented by interments, carved trees, wizards' hands, and charcoal drawings in rock shelters along the precipitous escarpments.

The first objects investigated under this head were the “Hands-on-the-Rock,” which had been reported by Mr. Cuneo. The “rock” consists of a huge mass of Hawkesbury Sandstone (Plate XII) about seventeen feet in breadth and length, hollowed out on the side overlooking the river to the extent of six feet. It is perched on the side of a gentle rise from the Wollondilly, having rolled from the higher ground above, and alongside the track from the Nattai Junction to Cox's River, in the immediate south-west corner of the Parish Werriberri. The cavernous front of the rock is fifteen feet broad, and twelve feet high. On the back wall are depicted a number of red hands, both right and left. The principal ones, arranged roughly in a sigmoidal curve, are reproduced in Plate XII, with the extended fingers invariably pointing upwards. The other hands are irregularly scattered to the right and below those just referred to, and altogether there may be as many as seventeen. Under the principal hands are four white curved bands, resembling boomerangs or ribs, the whole of the hands being relieved, as is usually the case with these representations, by white splash-work. The hand-marks in this shelter differ, however, from any I have seen before by an unquestionably previous preparation of the rock surface for their reception by incising the surface to the shape of each hand, thus leaving a slightly raised margin around each. I have recently given† an epitome of our knowledge of these hand imprints, their method of preparation, and supposed significance sufficiently full to render any further reference unnecessary at

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\* Quart. Journ. Geol. Soc., 1866, xxii., p. 445.

† C. S. Wilkinson, Notes on the Geol. N.S. Wales, 2nd Edit., 1887, p. 70.

† Records Geol. Survey N.S. Wales, 1892, iii., Pt. i., p. 34.

present. The colour red, amongst black races, was the symbol of evil.\*

Mr. Maurice Hayes, of Queahgong, informed me that he has known the rock for the past fifty years, and that the imprints have not altered in the least. He found it difficult to obtain reliable information from the Aborigines regarding them; they expressed ignorance, but ultimately gave him to understand that the "hands were the imprints of those of their Deity, when on earth."

The large alluvial flats in this neighbourhood, along the Wollondilly, were, I was informed, great gathering grounds for the various tribes from many miles round, even those of Goulburn and Shoalhaven participating.

On a spur overlooking one of these green expanses, known as Gorman's Flat, immediately at the junction of the Wollondilly and Nattai Rivers, in Portion B. 171/587, Parish of Wingecarrabee, County Westmoreland, we investigated an interment, thirty years old, indicated by a single carved tree, but the device has, I regret to say, been wantonly destroyed. This grave is known to be that of "Jimmy Aremoy," or "Blackman's Billy," of the local tribe, and called in the Aboriginal dialect *Ah-re-moy*, and was covered by a small mound at the foot of a small tree, forty-seven feet north of the carved tree, and had been surrounded by a sapling fence. After removing† the mound and superincumbent soil, we found the grave had been filled with boulders and large pieces of rock, to the depth of four feet six, whilst under this was a layer of split timber and bark. On removing this, we found the skeleton well wrapt in what had once been an old coat, a blanket, and an opossum rug. The skeleton was doubled up in the usual manner, the arms drawn up to the breast, and the legs against the abdomen, placed on the right side, and facing the south-east. On endeavouring to remove the remains, the whole collapsed, and it was found possible to secure only the skull and limb bones. The whole of the bones were blackened and much decayed, from the presence of a good deal of soakage water. Mr. Maurice Hayes told me that the local Aborigines generally buried in a sitting posture, the corpse being in a small drive from the bottom of the grave proper—the Theddora Tribe, at Omeo, buried in a similar manner‡—and with a stake driven through the skull from above; but in this case the deceased had certainly

\* Fraser, Journ. R. Soc. N.S. Wales for 1882 [1883], xvi., p. 213.

† The grave was opened with the permission and assistance of Mr. Maurice Gorman, the owner of the ground.

‡ Howitt, Journ. Anthropol. Inst. Gt. Brit. and Ireland, 1884, xiii., p. 190.

been laid in the prone position. Not the least interesting fact was the variety of articles placed with the deceased, according to aboriginal custom. Loose in the superincumbent earth we found an ingenious conversion of a piece of forked iron into a probable spear-head, a pointed stick, and some loose pieces of timber. Underneath the skeleton in various positions there occurred an old comb in two pieces, a thimble, a large iron spoon, the blade of another spoon, a small bullet mould, handle and portion of the tin plate-work of an old "quart-pot" or "billy-can," fragment of a clay tobacco pipe-stem, top of an old metal powder or shot-case, containing shot and a few shirt buttons, and last, but by no means the least curious, a castor oil bottle, still containing what seems to be a portion of the oil,—this was placed directly under the head.

Mr. Maurice Gorman subsequently conducted us across the Wollondilly to a slight rise above "Larry Gorman's Fat," Parish of Nattai, on the Nattai side of the Wollondilly, County of Camden, and a little below the junction of the rivers. Here we viewed the burial place of a "Chief" of the late local tribe, the interment having taken place about fifteen years ago. It lies contiguous to one of three marked trees placed in a triangle, the longest side or base of the latter being half a chain in length, and bearing north-west and south-east. The trees are still erect, although the carvings are more or less obliterated by bush fires, but they seem to have been chiefly in zig-zag lines, and of course cut with an iron tomahawk. The heavy rain prevailing at the time deterred us from investigating this burial. It is situated on either Portions C. 98/70 or C. 98/105, Parish of Nattai.

This concluded our investigations in Burraborang proper, but on returning to Thirlmere, we diverted our course near Vanderville, across the Werriberri Creek to "The Hermitage," the estate of Mr. W. G. Hayes, Parish of Burraborang, County of Camden. Through the kindness of Mr. Hayes we were allowed to examine a much more extensive burial-ground than either of the preceding. Here, on a small plateau above and to the east of the Waterfall Creek, a branch of the Werriberri, and behind, or to the south of the homestead, are four graves of various sizes distinguished by four carved trees, more or less in a state of dilapidation. There does not appear to have been any geometrical form of arrangement assumed in the placing of these graves, unless it be a roughly rhomboidal one. We expected, from current report, to find five graves here, but four only rewarded our efforts. Three of the graves and three carved trees are more or less in a north-west and south-east line. Starting at the north-west corner, the figures on a She-oak (*Casuarina*) have been partially obliterated, ten feet from this is the first grave, and fourteen feet from the latter is another carved She-oak (Plate

XIII., Fig. 1), now lying on the ground and much decayed. Fifty-one feet still further on occurs the largest grave, and at another fifty-one feet the third ornamented tree, a dead gum still standing but much burnt by bush fires, and bearing an extraordinary figure (Plate XIII., Fig. 2). Between the last grave and this tree, and deviating somewhat from the straight line in the third interment, at right angles to the original starting point; and fifty-four feet from it, at right angles, is the fourth carved tree, also a dead gum, bearing the figures shown in Plate XIII., Fig. 3. At right angles to this again, and distant sixty-four feet, is the fourth grave, apparently without any indicating tree near it. We did not investigate the contents of these graves owing to want of time.

The carving on the first tree (Plate III., Fig. 1) is four feet four inches long, and one foot seven inches wide; that on the second tree (Plate XIII., Fig. 2) is five feet six inches long, and one foot ten inches wide; and that on the third (Plate XIII., Fig. 3) is the smallest, three feet three inches long by nine inches wide, as now preserved.

In the Waterfall Creek previously referred to, are numerous grooved surfaces on the rock-bed and sides, caused by the process of tomahawk grinding.

I am not acquainted with any systematic account of Australian carved trees; in fact little seems to have been collectively written about them, and very few representations figured. Probably some of the earliest illustrations are those by Oxley, Sturt, and "W.R.G.," presumed to be from the context of his writings, Mr. Surveyor W. R. Govett, of Govett's Leap fame. Oxley discovered a grave on the Lachlan, consisting of a semi-circular mound, with two trees overlooking it, barked and carved in a simple manner.\* These carvings consisted of herring-bone on the one tree, and well marked curved although simple lines on the other. The explorer Sturt noticed an oblong grave beyond Taylor's Rivulet, Macquarie River, around which the trees were "fancifully carved on the inner side," one with a figure of a heart.† The anonymous author (W.R.G.) describes an occurrence of this kind at Mount Wayo, County Argyle, in the following words, "The trees all round the tomb were marked in various peculiar ways, some with zig-zags and stripes, and pieces of bark otherwise cut."‡ A Mr. Macdonald states that the Aborigines of the Page and Isis, tributaries of the Hunter River, carve serpentine lines on two trees to the north-west of each grave.§

\* Journ. Two Expeds. Interior N.S. Wales, 1820, p. 139, plate.

† Two Expeds. Interior S. Austr., 1834, I., p. 14.

‡ Saturday Mag., 1836, IX., No. 279, p. 184.

§ Journ. Anthropol. Inst. Brit. and Ireland, 1878, VII., p. 256.

The figures are either composed of right lines or curves, more commonly the former, but a few instances have been recorded of natural objects, such as the outline of an Emu's foot, seen by Leichhardt on a gum tree in the Gulf Country.\* One thing is self-evident, such carvings possessed a dual if not a triple significance. We have already seen the employment of them to indicate an interment, presumably acting the part of a tombstone, for it is believed by some that the figures on a tree in each case correspond to those on the inner side of deceased's 'possum rug, the *mombarai*, or "drawing," which Fraser thinks was distinctive in each family, or a peculiar modification of the tribal *mombarai*.† So far as I can gather, such devices invariably indicated the last resting-place of a male. Mr. E. M. Curr states‡ that the Breeaba Tribe, at the head-waters of the Burdekin River, North Queensland, employed marked trees to commemorate a battle. He figures a tree from the banks of the Diamantina, barked and marked by a series of close, irregularly super-imposed notches, like those made by a Black when climbing a tree. These, however, can hardly be compared to carvings.

According to Mr. J. Henderson, Dr. John Fraser, Mr. A. W. Howitt, and Mr. Macdonald previously mentioned, Bora Grounds are also embellished with carved trees. The first-named describes § the approach to one of these initiation places at Wellington as through "a long, straight, avenue of trees, extending for about a mile, and these were carved on each side with various devices. . . . At the lower extremity of this, a narrow pathway turned off towards the left, and soon terminated in a circle." Mr. Henderson further remarks that the fact of the use of this place for Bora purposes was communicated to him by the then headman of the tribe. Dr. Fraser says|| that the Gringai Tribe, one of the northern N.S. Welsh tribes, clear two circular enclosures, one within the other, for their Bora, and that the trees growing around the smaller circle are carved "with curious emblematical devices and figures"; whilst Mr. Macdonald informs us that on the Bora ground of the Page and Isis River Natives, as many as a hundred and twenty marked trees occur round about.¶ Confirmation is further afforded by Mr. W. O. Hodgkinson, who saw a Bora ground on the Macleay River with "trees minutely tattooed, and carved to such a considerable altitude that he

\* Journ. Overland Exped. Moreton Bay to Port Essington, 1847, p. 356.

† Journ. R. Soc. N.S. Wales for 1892 [1893], xvi., p. 201.

‡ The Australian Race, 1886, ii., p. 433.

§ Obs. Colonies of N.S. Wales and V.D. Land, 1832, p. 145, pl. 3.

|| Journ. R. Soc. N.S. Wales for 1882 [1883] xvi., p. 205.

¶ Journ. Anthropol. Inst. Gt. Brit. Ireland, 1878, vii., p. 256.

could not help feeling astonished at the labour bestowed on the work.”\*

If, as previously stated, according to current report, the designs on the trees be the same as those on the 'possum rugs, the transfer of them to the trees surrounding a grave must have had some important and lasting meaning to the survivors. The figures on the rug may have indicated some degree of ownership, a crest, coat of arms, or monogram, as it were, and in such a case the reproduction on the trees surrounding a grave may be looked upon as an identification of the deceased. Henderson speaks of the tree carvings as symbols. “A symbol is afterwards carved upon the nearest tree, which seems to indicate the particular tribe to which the individual may have belonged.”† Or had they a deeper esoteric meaning, one only known to the learned men of the tribe? Smyth states‡ that the figures on the inner sides of the 'possum rugs “were the same as those on their weapons, namely, the herring-bone, chevron, and saltier.” How easily these same devices can be traced, in a general way, both on the carved trees and some of the wooden weapons, is amply shown by many of the excellent figures given in Smyth's work. This painstaking Author, in briefly dealing, too briefly in fact, with this interesting subject, says,§ “The natives of the Murray and the Darling, and those in other parts adjacent, carved on the trees near the tombs of deceased warriors *strange figures having meanings no doubt intelligible to all the tribes* in the vast area watered by these rivers.” By the Kamilarai|| they were regarded as “memorials” of the dead.

It is much to be regretted that before the last remnant of this fast disappearing race has passed away, a translation, or at any rate an explanation of these matters, cannot be obtained.

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\* Smyth, *Aborigines of Victoria*, 1878, I., p. 292.

† *Obs. Colonies of N.S. Wales and V.D. Land*, 1832, p. 149.

‡ *Aborigines of Victoria*, 1878, I., p. 288.

§ *Ibid.*, p. 286. The italics are mine.

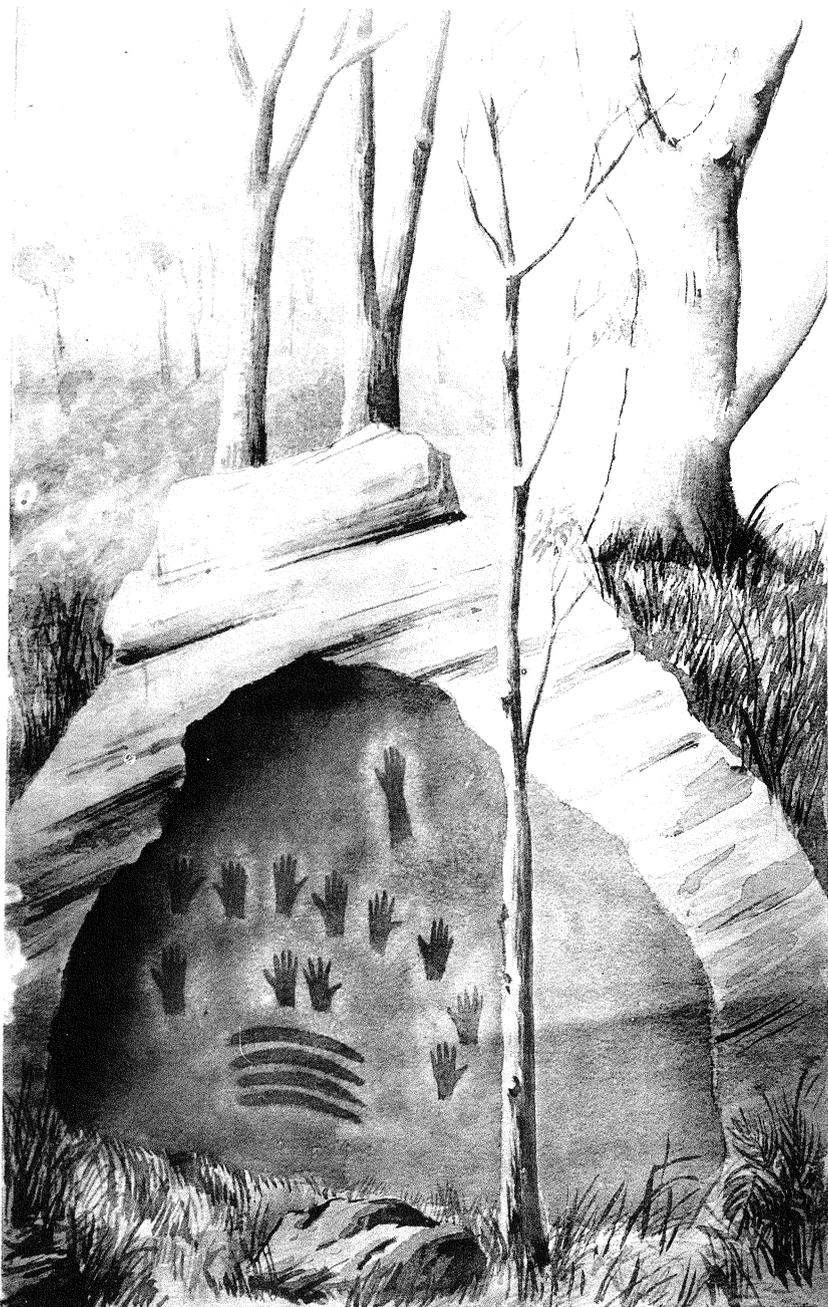
|| T. Honery, *Journ. Anthropol. Inst. Gt. Brit. and Ireland*, 1878, vii., p. 254.

EXPLANATION OF PLATE XII.

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Fig. 1. The mass of Hawkesbury Sandstone, known as "Hands-on-the-Rock," Wollondilly River, S.W. corner of the Parish of Werriberri, County Camden.

[Prepared from rough sketches by the Author, by Mr. G. H. Barrow, of the Australian Museum, and reproduced by the photoline process.]



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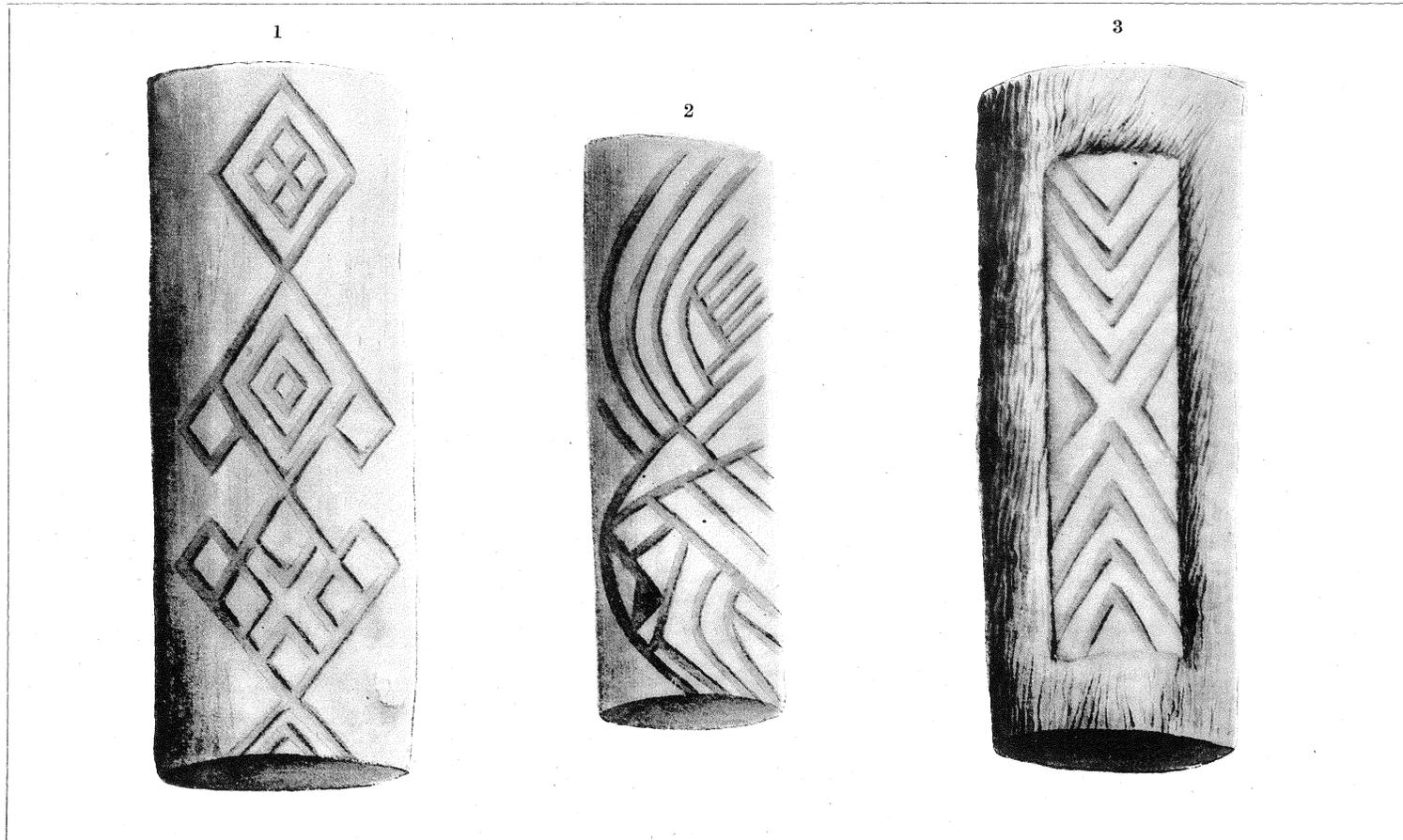
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EXPLANATION OF PLATE XIII.

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- Fig. 1. Carved tree (*Casuarina*) near grave, at the "Hermitage,"  
Werriberri Creek, Parish of Burragorang, County Camden.
- „ 2. Carved tree (*Eucalyptus?*) near grave, and contiguous to that  
represented in Fig. 2.
- „ 3. Carved tree (*Eucalyptus?*) same localities as those of Figs.  
2 and 3.

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### CORRECTIONS.

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Page 91, line 17, read p. 35 instead of p. 1.

Explanation of plate xiii. fig. 2, read fig. 1 instead of fig. 2.

” ” ” 3, read figs. 1 and 2, instead of figs. 2 and 3.