



5th.

ANNUAL ARCHÆOLOGICAL REPORT  
AND  
CANADIAN INSTITUTE,  
(SESSION 1891),

BEING  
AN APPENDIX  
TO THE  
REPORT OF THE MINISTER OF EDUCATION,  
ONTARIO.

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PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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TORONTO:  
PRINTED BY WARWICK & SONS, 68 AND 70 FRONT STREET WEST.  
1892.



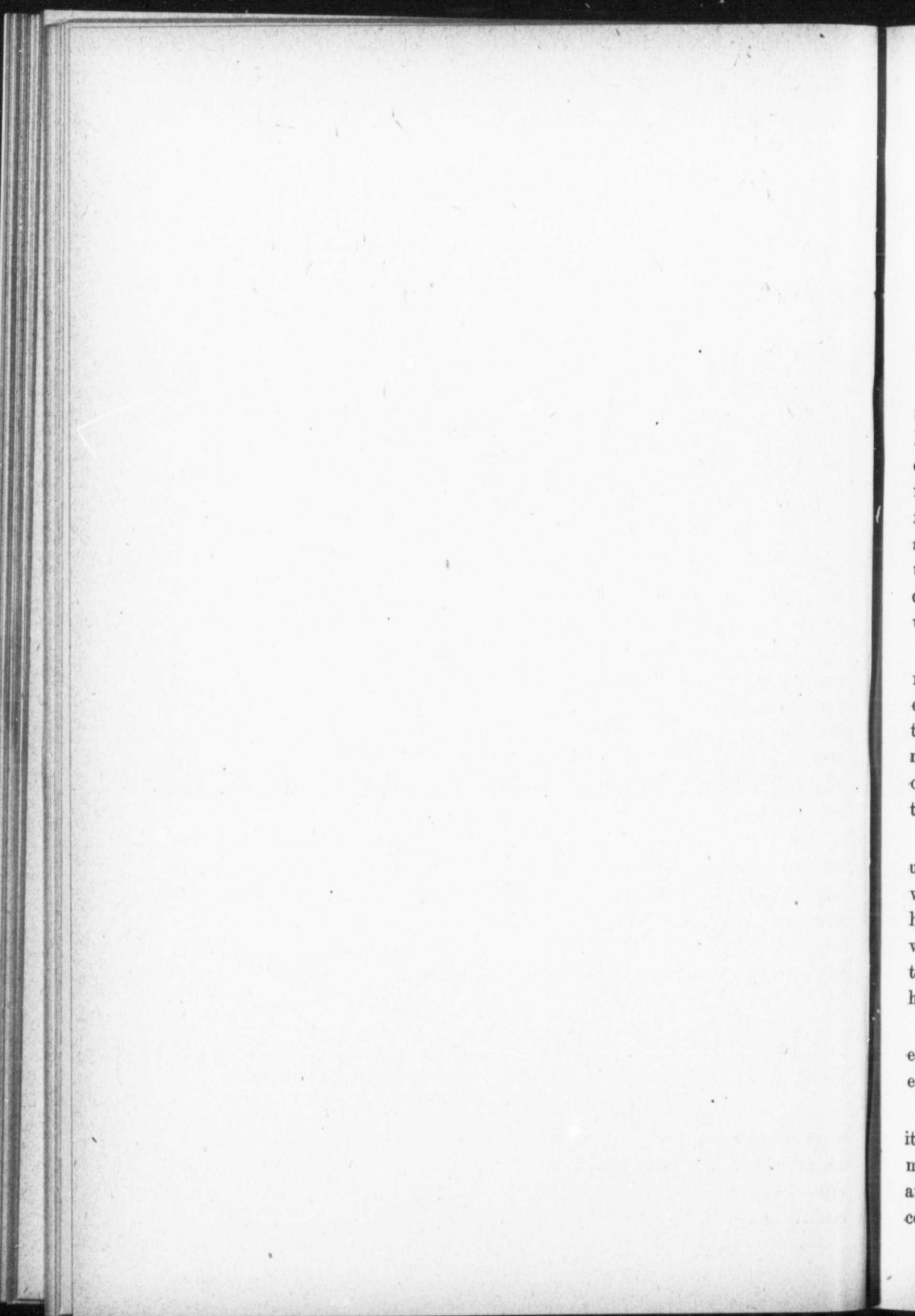


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## ARCHÆOLOGICAL REPORT.

BY DAVID BOYLE.

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*To the President and Members of the Canadian Institute:—*

GENTLEMEN,—Our year's work has been successful, and I am able to announce augmented interest in archæological matters, beyond the limits of the Institute. The increase of correspondence alone has been considerable and has occupied an unusually large portion of time. Many of the letters received are from farmers and young people; from the former, generally, with regard to features observed on the farm, and from the latter, asking for information about specimens they have found, and where they may procure books that will lend them assistance in prosecuting the study of archæology. In a large number of cases correspondents ask for copies of our reports, but these, I am sorry to say, we cannot always send, as the issue is too small to supply the increasing demand.

During no other period since the commencement of this work have so many requests and invitations been received to go here and there for the purpose of examining this or that locality. Only want of time and means has prevented this being done in many cases. It is hoped, however, that much of such work may be overtaken during the next year, especially in some of the newer parts of the country, where the conditions for investigation are superior to those of the old settlements.

With the increase of interest manifested in this study, two types of individual are particularly noticeable. First, there is the man of true scientific instinct, who says, in effect, "I am glad this work is going on, and it is my intention to help it in every way I can," and, secondly, there is the sordid, mercenary man, who says in effect also, "I am glad this work is going on, and it is my intention to help it in every way I can, *so long as I can make anything out of it.*" We have to thank both for much valuable assistance rendered during the year.

Again also, we are indebted to the Legislature of the province for the aid extended to our work. Without it, absolutely nothing could have been done, except in a very perfunctory sort of way.

Up to the present time, one of the chief drawbacks to the museum has been its undesirable situation on a third storey. It is hoped that the new arrangements entered into will render it more attractive to the general public. Hereafter, with the approval of the Minister of Education, the Museum will find accommodation in the building of the Toronto Public Library, where it will be open

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daily, (all day, and not only during afternoons as formerly). This arrangement however, affects only the *exhibition* of the specimens. As heretofore, the archaeological work will be under the direction of the Canadian Institute, and will be as purely provincial in its character as it has always been.

During the year we have been under especial obligations to Hon. Peter McLaren and Mrs. McLaren, of Perth; Dr. T. A. Beeman, of Bancroft; Dr. T. W. Beeman, of Perth; Dr. M. I. Beeman, of Centreville; Mr. Arthur Brown, Public School Inspector, Morrisburg; Mr. Archibald Riddell, Bancroft; Mr. Fred. Mullett, Bancroft; Mr. John Bell, ex-M. P. Lennox and Addington; Mr. Chester Henderson, Southwold; Mr. D. H. Price, Aylmer; Mr. J. H. Coyne, St. Thomas; Mr. J. H. Crouse, Brantford; Messrs. McCrossen, Osborne and Bend, of Penetanguishene; Mr. W. H. Jones, Vancouver City, British Columbia; Mr. T. Sydney Dobbin, Esquimalt, British Columbia; Mr. Alan Macdougall, Toronto; Capt. David Allan, Elora; Mr. Jas. Bolan, Springfield, Mass.; and to Messrs. W. J. Morris, Harry Morris, Jas. Knox, J. S. Wilson, Cyrus Davis, Nelson Covell, E. M. Morgan, Andrew McCoy, Andrew Drummond, Thos. H. Scott, Matthew Scott, Mrs. Sherritt, James King, James McLaren, Geo. Hone, Geo. Carpenter, Chas. Mackey, John P. Fraser, J. F. Kennedy, Jas. Graham, Thomas Moffat, J. W. Borowman, Jas. Jackson, Mrs. Smith, W. H. Blair, Daniel McDonald, James Walker, John Coutts, R. McLean, John F. Moore, Andrew Paul, Miles Brown and Austin Keays, all of whom have contributed through Dr. T. W. Beeman, to make the collection from Lanark county as nearly as possible a thoroughly representative one.

Mr. W. J. Moule, the artist, has taken pains to make the drawings for this report as accurate as possible, and the engravings made by the Central Press Agency have been capitally reproduced, by the photozincographic process.

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## NOTES.

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"The student who applies the comparative method to the study of human customs and institutions is continually finding usages, beliefs, or laws existing in one part of the world that have long since ceased to exist in another part; yet where they have ceased to exist they have often left unmistakable traces of their former existence. In Australia we find types of savagery ignorant of the bow and arrow: in aboriginal North America, a type of barbarism familiar with the art of pottery, but ignorant of domestic animals or of the use of metals; among the earliest Romans, a higher type of barbarism, familiar with iron and cattle, but ignorant of the alphabet. Along with such gradations in material culture we find associated gradations in ideas, in social structure, and in deep-seated customs. Thus some kind of fetichism is apt to prevail in the lower stages of barbarism and some form of polytheism in the higher stages.

"In the most advanced societies we find numerous traces of such states of things as now exist only among savage or barbarous societies. Our own ancestors were once polytheists, with plenty of traces of fetichism. They were organized in clans, phratries, tribes. There was a time when they used none but stone tools and weapons, when there was no private property in land, and no political structure higher than the tribe. Among the forefathers of the present civilized inhabitants of Europe are unmistakable traces of human sacrifices, and of the reckoning of kinship through the mother only. When we have come to survey large groups of facts of this sort, the conclusion is irresistibly driven home to us that the more advanced societies have gone through various stages now represented here and there by less advanced societies; that there is a general path of social development, along which, owing to special circumstances, some peoples have advanced a great way, some a less way, some but a very little way, and that by studying existing savages and barbarians we get a valuable clue to the interpretation of pre-historic times. All these things are to-day common-places among students of history and archæology; sixty years ago they would have been scouted as unintelligible and idle vagaries. Yet to this change is entirely due the superior power of modern historical methods. Formerly the historian told anecdotes or discussed particular lines of policy; now he can do that as much as ever, but he can also study nation-building, and discern some features of the general drift of events from the earliest to the most recent times."—*John Fiske, Pop. Science Monthly, Sept., 1891. pp. 585. 586.*

With the advance of time, interest increases in all that relates to the early condition of man. The words *ethnology*, *anthropology* and *archæology* are rapidly becoming as common as *geology*, *astronomy* and *geography*. Everything that illustrates a point in the life-history of existing primitive peoples is carefully noted; comparisons instituted, and conclusions either arrived at or attempted. A German traveller recently discovered a tribe of cave dwellers in Africa, and, thereupon, curiosity was aroused as to how the manners and customs of these modern troglodytes would bear out conclusions arrived at from an examination of ancient cave-dwellings in France, Belgium and England. Notwithstanding racial distinctions and lapse of time, the results of the comparison were said to be highly satisfactory.

But, although much has been written, especially during the last half century, on the beginnings and growth of society, one still hears a frequent repetition of the query, What does it matter to us how a lot of savages lived a hundred or a thousand years ago? A query of this kind always embodies a sneer; a sneer implying that time devoted to such matters is spent foolishly or absolutely thrown away.

"We are too apt," says Reclus,\* "to look down scornfully from the heights of modern civilization upon the mental processes of former times, upon the ways of feeling, acting and thinking, which characterise human aggregations anterior to our own. How often we scoff without knowing anything about them! We have fancied that the ethnology of inferior races was nothing but a medley of

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\*Élie Reclus in "Primitive Folk," 1890, p. vii.

nonsense; and, in fact, prejudices appear doubly absurd when we do not possess the key to them. We have ended by believing that there is no intelligence but our own, no morality that does not fit in with our formulas. But who are we that we should take up such a lofty position with regard to the intellectual and moral weakness of those who preceded us? There is a lesson to be learnt, if we take the pains to look for it, in these errors through which the human race has passed, these illusions which it has left behind. They are no mere anomalies or sports of chance launched forth into empty space; they have been produced by natural causes, in natural, and we may say, logical order. \* \* \* The whole series of superstitions is but the search for truth amidst ignorance."

A common error regarding savages is that they have lived, or still live, in a state of chronic war and bloodshed, either with their neighbours or among themselves; a moment's consideration should suffice to show the fallacy of this view, for besides the very considerable amount of time required to provide food and the material for clothing, many, many days and weeks of patient labour were spent in flaking flints, chipping and polishing celts, boring holes in implements of various kinds, and in fashioning what, to us, are mysterious objects, so far as their use is concerned.

Misconception of this kind is likely to arise from the perusal of "penny dreadfuls," and even from books of professedly higher aim, where the savage is never introduced without a "diabolical grin on his countenance, a war-club in his blood-stained hand," and "his dishevelled locks matted with the gore of his innocent victims."

Prince Kropotkin\* on this point remarks, "At no period of man's life were wars the *normal* state of existence. While warriors exterminated each other and the priests celebrated their massacres, the masses continued to live their daily life, they prosecuted their daily toil. And it is one of the most interesting of studies to follow that life of the masses; to study the means by which they maintained their own social organisation, which was based upon their own conceptions of equity, mutual aid, and mutual support of common law, in a word, even when they were submitted to the most ferocious theocracy or autocracy in the state."

The myths and superstitions of primitive folk, their social organization, their germs of constitutional government, their daily occupations, their forms, ceremonies, games and amusements, the mechanical methods and devices they employed, and the examples of their handicraft—all these must ever possess an increasing interest to thoughtful persons generally, but more especially to those whose desire it is to study civilisation "in its wide ethnographic sense" as "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society." "Even when it comes to comparing barbarous hordes with civilised nations, the consideration thrusts itself on our minds, how far item after item of the life of the lower races passes into analogous proceedings of the higher, in forms not too far changed to be recognised, and sometimes hardly changed at all. Look at the modern European peasant using his hatchet and his hoe, see his food boiling or roasting over the log fire, observe the exact place which beer holds in his calculation of happiness, hear his tale of the ghost in the nearest haunted house, and of the farmer's niece who was bewitched with knots in her inside till she fell into fits and died. If we choose out in this way things which have altered little in a long course of centuries, we may draw a picture where there shall scarce be a hand's breadth difference between an English ploughman and a negro of Central Africa." †

\* "Mutual Aid Among Savages," *Nineteenth Century*, April, 1891, p. 559.

† "Primitive Culture," by Edward B. Tylor, London, 1871, vol. 1, p. 6.



Except, perhaps, in the matter of house accommodation, it might not be difficult to prove that the every-day life of the old American savage was superior to that of peasants in some civilised communities to-day. This, not so much to the credit of the Indian, as to show that modern society in at least a few of its phases, has not made all the advance it was capable of making, or that we have a right to suppose it should have done.

In the region of the æsthetic, the Indian, even of this northern latitude, occupied an immensely higher plane than the class just mentioned. He understood the effect of colour, and employed it to some purpose, both in personal decoration and on articles of manufacture; his sense of the elegant in form is well illustrated in the graceful outline given to many of his coarse clay vessels, his pipes of stone and clay, and in the great variety of beautifully fashioned objects which are known to us, for the want of a more definite name, as "ceremonial" weapons. In the adornment, too, of his clay pipes and pots he attempted to please the eye by means of depressed lines, dots and circles, to form patterns, some of which are both regular and complicated.

Morally, his code may not have been a very high one, but religiously, he may fairly be placed among the first of animists. To him, everything visible and tangible was the abode of a spirit. When he dreamt of anything he must obtain it, lest his spirit should forsake his body to fraternise with the spirit of what appeared to him in his sleep; or his dream was a visit paid to him from the soul of the subject of his dream.\* According to Morgan† the Iroquois used to make a hole in the grave to facilitate the passage of the soul from and to the body, and more recently it was customary to bore one or more holes in the coffin for a similar purpose.

Sagard informs us that the soul of the dog, went to serve the soul of his owner in the Spirit-land.† Of nothing concerning the Indians are we more certain than of his pan-spiritism—all the early writers referred to this belief. Not only were natural objects thus regarded, for weapons, tools, ornaments, war-paint and all other objects, partly or wholly manufactured, were similarly possessed. Hence the custom of placing those articles in graves.

"That the purpose of such offerings is the transmission of the objects' spirit or phantom to the possession of the man's, is explicitly stated as early as 1623 by Father Lallemant: when the Indians buried kettles, furs, etc., with the dead, they said that the bodies of the things remained, but their souls went to the dead who used them. The whole idea is graphically illustrated in the following Ojibwa tradition or myth. "Gitchi Gauzini was a chief who lived on the shores of Lake Superior, and once, after a few days' illness he seemed to die. He had been a skilful hunter, and had desired that a fine gun which he possessed should be buried with him when he died. But some of his friends not thinking him really dead, his body was not buried; his widow watched him for four days, he came back to life, and told his story. After death, he said, his ghost travelled on the broad road of the dead toward the happy land, passing over great plains of luxuriant herbage, seeing beautiful groves, and hearing the songs of innumerable birds, till at last, from the summit of a hill, he caught sight of the distant city of the dead, far across an intermediate space, partly veiled in mist, and spangled with glittering lakes and streams. He came in view of herds of stately deer, and moose, and other game, which with little fear walked near his path. But he had no gun, and remembering how he had requested his friends to put his gun in his

\* Nouvelle France, Charlevoix, vol. vi., p. 78.

† Iroquois—Morgan, p. 176. ‡ Histoire du Canada, Theo. Sagard p. 497.

grave, he turned back to go and fetch it. Then he met face to face the train of men, women, and children who were travelling toward the city of the dead. They were heavily laden with guns, pipes, kettles, meats, and other articles; women were carrying basket-work and painted paddles, and little boys had their ornamented clubs, and their bows and arrows, the presents of their friends. Refusing a gun which an overburdened traveller offered him, the ghost of Gitchi Gauzini travelled back in quest of his own, and at last reached the place where he had died. There he could see only a great fire before him and around him, and finding the flames barring his passage on every side, he made a desperate leap through, and awoke from his trance. Having concluded his story he gave his auditors counsel that they should no longer deposit so many burdensome things with the dead, delaying them on their journey to the place of repose, so that almost every one he met complained bitterly. It would be wiser, he said, only to put such things in the grave as the deceased was particularly attached to, or made a formal request to have deposited with him.\*

Perhaps it is in some degree owing to this belief in universal spirit possession that our northern Indians so seldom ventured to fashion anything immodest, or even suggestive. That it was not for the want of mechanical ability we know—the multiplicity of designs in clay, stone and bone sufficiently attest this, but whatever the reason may have been the almost entire absence of such objects is a noteworthy fact, when taken in connection with the early records relating to all the tribes in this part of America.

Among North American Indians, perhaps the Cherokees deserved least credit for their good taste in this respect, but even they compare favorably with the peoples of South America.

While many specimens, (especially flaked ones) found in different parts of the province, may be classified as palæoliths, they have, up to the present time always been found associated in such a way with neoliths that it is impossible to designate them as palæoliths with any degree of certainty. Leaf-shaped "flints" have been picked up that are quite as rudely formed as any from the deepest stalagmite deposits of Europe, but never in situations to suggest that they are other than rough-hewn tools or weapons, which, as such, had a purpose in the economy of people who were capable of producing better things. Until we find specimens of this kind, as Dr. Abbott found them in the Trenton gravels, or in some situation isolated from all others, or distinct as to material or coating from specimens of a superior quality in the same neighborhood, we shall not be warranted in making any distinction relative to time of possible production. Those that approach most nearly to satisfying some of those conditions, and now in the museum, were found on the farm of Mr. Seabrook, near Komoka in Delaware township. Nearly seventy were found in a "nest" only a few inches below the surface. In appearance they bear every mark of being much older than other specimens found in the same district, but unfortunately, among the lot as forwarded to us was an arrow-head of decidedly more recent type, and Mr. Seabrook asserts that it was found along with the rest. A further reference to these, with two cuts, may be found in the *Archæological Report for 1886-7* p. 45.

\*Primitive Culture, Tylor, vol. 1, pp. 434, 435.

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## SOUTHWOLD EARTHWORK.

A former examination of this remarkable earthwork in company with Dr Tweedale having proved unsatisfactory for want of time, the place was visited again last May by Mr. Jas. Bain, Mr. W. H. Jenkins and myself, Mr. Chester Henderson the proprietor, and Mrs. Henderson doing everything possible to facilitate the object we had in view.

It was thought that a close scrutiny might lead to the discovery of the remains of palisades, as in the case of the Beverly works [Can. Inst. Ann. Rep. 1886-7, p. 11] but in this we were disappointed. We uncovered the banks at various points, by removing the sod to the depth of several inches, but no trace of palisades was found anywhere. At a place near the south-east point, where the outer bank measured seventeen feet across the base, and was three and a half feet above the adjacent level, we made a cut the whole depth exposing a clean section, which showed very clearly the structure of the work, on account of the admixture of dark and light-coloured mould as it had been thrown up by the builders.

A large number of test-holes, made in various parts of the enclosed area, proved the existence of various ash-heaps. Some fragments of pottery and deer-horn were found.

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## MALAHIDE.

The people who at one time held the ground now included in the county of Elgin, have left many evidences of their fondness for the throwing up of embankments, of which the most remarkable is that in the township of Southwold, already referred to. But others are reported in various parts of the county.

In Malahide township there are several works of this kind, a few of which we examined. On the farm of Mr. Stephen Pound, lot — concession 7, is a plateau, some three or four acres in extent, the sides of which facing the north-east and south-east respectively, are unusually steep and from fifteen to twenty-five feet in depth. The sides mentioned converge to a point almost due east, and connecting the opposite ends where the declivities begin is a bank about one hundred yards long, forming the western boundary of a triangular area. Only twelve or thirteen years ago this bank is said to have been quite three feet high; it is now barely one foot above the level, having been already ploughed five or six times.

Taking into account the two naturally formed steep sides, there can be little reasonable doubt that the embankment was constructed for the purpose of defending the spot on its weakest or most approachable side. The bank was probably palisaded, but the length of time the ground had been under cultivation rendered it useless to look for any traces of such fortification. On the Dalby farm, lot 26, concession 6, is a bank eighty-six feet long and nearly two feet high. It is not quite straight, but forms a very obtuse angle twenty-two feet from its western extremity. While this elevation has both internally and externally apparent evidences of artificial formation, we could find no traces of posts or palings, nor did it at all resemble the heaps sometimes left to indicate the former existence of a "long-house."

On the same farm and but a short distance away, are two mounds each twenty-five feet in diameter, one being about two feet, and the other nearly four

feet high. They are old kitchen-middens, consisting mainly of ashes and domestic refuse. Both have been opened at various times with the usual result: clay pipes, broken pottery, splintered bones and unio shells.

From an eighty-three-year-old native of the township, we learned that while a good many skeletons have been discovered singly, no ossuaries have been found in that part of the country.

### CAMDEN.

The township of Camden, in the county of Addington, has been in former days a famous Indian fishing and hunting ground. On the invitation of Dr. M. I. Beeman, of Centreville, I spent a few days there during the past summer, and although some of the places examined did not "pan out" as well as could have been wished, a considerable amount of information was gained—information that will probably prove valuable in future.

Being joined by Dr. T. W. Beeman, of Perth, we proceeded first to examine a number of knolls situated very closely to one another on the farm of Mr. Israel Stewart, lot 37, in the 4th concession of the township. For many years, these had been regarded by the settlers "in all the region round about" as Indian graves, but the first glance tended to throw discredit on this view. A few spadefuls of earth from some of them speedily satisfied us (if we had any doubt) that the knolls were of natural formation, and the wonder is that such a simple test had not been made long before, by those who regarded them as what they were not.

On the same farm there is a long bank, some three or four feet above the general level, which has every surface appearance of our western earth-works, and of one I subsequently visited further east, in the township of Williamsburgh. An examination of this bank revealed to us the fact that it was simply an ancient reef, formed by the anticlinal strata of an upheaval which took place long before even the Indians had "discovered" America.

In an adjoining field, close to Varty Lake there are still many traces of former Indian occupation, and here, some years ago, Mr. Stewart found a fine copper spear-head, which came into our possession through Dr. T. W. Beeman.

Along a low ridge on the farm of Mr. George Milligan, lot 29, con. 6, we found innumerable traces of old-time residence, consisting mainly of pottery fragments, and one bone awl or bodkin (with a hole in it) picked up by Dr. Beeman.

On the farm of Mr. Joseph B. Lucas, many interesting specimens have been found from time to time. From this gentlemen we have procured a large, block-out, stealite, platform pipe (see figure 28), two gouges and three large stone axes.

Mr. George G. Wager, of the village of Enterprise, presented us also with a knife-like formed lime-stone specimen, the shape of which is probably due to natural causes.

Besides the gentlemen already referred to, our thanks are due to Mr. John W. Bell, ex-M.P., for the courtesy and assistance he rendered during a portion of the time spent in Camden township.

From the interest that has been created in that part of the country, profitable returns may yet be expected, and should any discovery be made, the Institute will no doubt hear of it, through Dr. M. I. Beeman.



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 WILLIAMSBURGH.

Early in the season, I received from the Minister of Education, a letter addressed to him by Mr. Arthur Brown, Public School Inspector of Dundas county, pointing out that in the township of Williamsburgh, a few miles from Morrisburg, there was still to be seen a portion of what had once been very extensive earthworks. Mr. Brown expressed the opinion that the place should be examined in the interests of archæology, and we have to acknowledge our indebtedness to him for calling attention to what is (or was), according to our present state of knowledge, the most easterly circular embankment in Ontario. On reaching Morrisburg, Mr. Brown kindly accompanied me to the place, and put me in communication with Mr. J. J. Merkely, one of the oldest residents in that part of the country. Mr. Merkely remembered seeing the embankment first in 1816. It was then about three feet above the surrounding level, and enclosed an area of about five acres. His father Mr. Jacob Merkely, and his uncle Henry had both told him that within the enclosure there were five "pottery ovens," but this statement my informant regarded as having reference rather to quantities of pottery fragments found in certain places, than to anything in the form of structures that could properly be called "ovens." Many stone and bone implements had been collected from the place, but nothing indicative of European influence—no iron, sheet-copper, or glass.

Remains of human bodies had been exhumed, but these invariably belonged either to isolated graves containing only one body, or to single graves arranged in rows—no ossuaries or communal graves are known to have been found in the neighbourhood.

All that remains of this ancient earthwork is a few feet of the bank lying partly outside and partly inside of the fence, on the west side of the road that runs in a northerly direction from Morrisburg through the township of Williamsburgh, and which at this point separates lots 30 and 31 on the fifth concession. So inconspicuous is the remaining portion of this once extensive embankment, that none but persons who know of its former connection would regard it as other than a hummock or "cradle-knoll."

Having cut a section through it, however, the evidence was conclusive that the earth had been thrown up artificially, besides which, we found fragments of pottery at various depths as low as three feet.

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 HERSHELL.

Almost midway in a line extending south-west from the Ottawa river to lake Simcoe, is situated the township of Hershell. It is one of the most northerly in Hastings county and has within its limits a lake known as Baptiste, about eight miles in length. This lake has continuous river communication, through the York and Madawaska rivers, with the Ottawa, and by means of portages between the innumerable lakes and many streams to the west and south, it would not be difficult to maintain canoe intercourse with the Georgian Bay, Lake Simcoe, Chemung Lake, Rice Lake and Lake Ontario. At all events, it is evident that it has once been a fairly populous centre, and that too, until within a comparatively recent period. Several village sites and camping grounds have been observed at various places on the shores of Baptiste Lake, and last summer there was discovered a burial ground of considerable extent. I am sorry that before I succeeded in reaching it

a number of amateurs had so destroyed the surface marks and disturbed the graves that my examination was not nearly so satisfactory as I could have wished.

Whoever the people were that made their interments here, they were not of Huron-Iroquois stock, as the graves, numbering nearly forty, were all single and arranged in rows, like those recorded last summer on the farm of Mr. G. E. Laidlaw, on Balsam Lake, in the township of Bexley. Neither was the ground by any means the highest in the neighborhood, but appears to have been chosen on account of its light sandy character and its accessibility to the water.

The graves were of two kinds—some being encircled on the surface with stones placed close to each other, and some having no such arrangement. In every case the situation of a grave was known by the presence of a slight depression in the soil. The average depth of the interments was not more than three feet; the deepest one I opened being nearly four feet, and the shallowest one scarcely more than a foot. The bodies seem to have been placed in the ground without any reference to system or plan, so far as I could see, although I understood some of those who had opened other graves to say that the skulls all faced the lake, *i.e.*, westward. In several of the graves were found remains of iron knives, sword-blades and iron arrows. This, of course, pointed to the comparatively recent period of these particular burials, but I was anxious to learn whether such articles were found only in the graves having the stone circles; in those that had not, or in both kinds. I am sorry I cannot say very definitely how this was—I can only go the length of stating that in none of the stone-encircled graves opened under my eye, were there any traces of iron implements, whereas, in one not so marked, we found a quantity of iron weapons.

On the higher ground and at some distance from the other graves, I was fortunate enough to discover one day, the spot in which a child had been buried. The remains were scarcely a foot below the surface, and but little of the skeleton was left. Only the ulna of one arm remained surrounded by two rows of small wampum, which, strung as beads, had probably been worn by the child. Besides this the grave contained a bone comb (fig. 62), the top of a wooden comb (fig. 78), half of a sleigh-bell, a quantity of copper, glass and shell beads, and a small European copper vessel, not more than six inches in diameter. Another child's grave opened by Dr. Beeman contained a number of glass beads and a circular wooden box about three inches in diameter, holding within it a small native-copper spoon-like article, and a tiny moccasin.

Mr. Archibald Riddell in other graves found a "whitestone" pipe (fig. 15) some bone tools and several fragments of iron weapons, all of which he has kindly presented to the museum.

Dr. T. A. Beeman also presented us with all he discovered in the same place. Other specimens found by Messrs. Mulcahy and Robins were procured by purchase, so that the collection from this burial-place is now tolerably complete.

On the whole, this burying-ground is an interesting one. The people were probably Ojibwas, rather than Hurons or Iroquois. If Ojibwas, it is likely they were Mississaugas who had advanced so far on their southward and westward march after European occupation along the front prevented Iroquois incursions, or after the Iroquois had exhausted themselves in their attempts to exterminate other foes.

Among the Mississaugas it is an accepted article of belief, that on the occasion of their last encounter with the Mohawks, as they call them, the Iroquois were so fearfully worsted that an agreement was come to between the two peoples that the hatchet should forever be buried.

However this may be, it is plain that those who made many of the Herschell graves were at that time in communication with the whites, and yet this inter-

course had not proceeded far enough to modify the old burial customs of the natives. With the stone pipe-heads, the bone implements and the wampum, were buried copper vessels, sword-blades, and glass heads. Elsewhere, it is true, we frequently find a similar condition of things, but here the presence of a small birch-bark basket, a wooden box, a toy or baby moccasin, and some fragments of coarse cloth, would seem to point to a time considerably more recent than when the graves in the Huron and Neuter countries were formed, unless, indeed, it can be shown that the soil in Herschell possessed superior preservative qualities.

Taken altogether the case containing the material from the shore of Baptiste Lake is one of the most complete and, therefore, most interesting and instructive in the museum. The bone tools are dissimilar to anything else we have, (see figures 63 to 66 in this report), and I have not seen anything like them figured or described elsewhere.

### LANARK COUNTY.

BY T. W. BEEMAN. M.D.

Former reports of the Canadian Institute have dealt principally with the archæology of the western end of this Province.

It has been my privilege to have the opportunity to devote some time to the subject in a part of Ontario that has not received much attention.

The country about the Rideau range of lakes shows every sign of a once, numerous Indian population. The advantages offered by these waters for communication were great.

My work has been confined to the Tay river and part of the lower Rideau Lake but I secured a number of specimens from the farmers generally in the county.

From all appearances the Rideau seems to have been the principal Indian resort as here are found in greatest quantities, evidences of an occupation that must have been extended over a great length of time. The reason for believing that the occupation of the lake was an old one is, that there is a marked difference in the weathering of different specimens. The pottery also shows two different periods of time, and possibly two distinct peoples. As a rule the older pottery was far superior in make and ornamentation to the newer. Pieces of both were found lying together in the same field or on the same shore.

About the lake, every bit of sandy beech on the banks along the mouth of a stream emptying in the lake, was sure to yield large numbers of specimens. Following up the streams, every small lake showed one or more old village sites. One in particular, Murdy Lake, showed one of the oldest camping places. Nearly fifty years ago a dense hemlock growth was cleared off here, and even yet the ash-beds of their old camp-fires are plainly visible. Numbers of specimens have been found about this lake, at different times and more may be expected from here. Through the kindness of Mrs Peter McLaren, I was enabled to visit many different places about the Rideau on her steam yacht "Geraldine." Mrs McLaren, takes an active interest in the work and, but for her I would not have been able to do nearly so much. During our visits to the lake we found such a great amount of work to be done, that it will take years of observation to get the researches fairly begun. At the Narrow Locks, the dividing-point between the lower and upper Rideau we found what was evidently an open-air work-shop, as the shore for yards was covered with flint chippings. The flint could be obtained on an island but a short distance from this point.

Material of different kinds used in the manufacture of implements and wea-



pons is to be found about the Lake—steatite in abundance—Lake Huron slate in large deposits not far away, besides sandstone, granite and slate. The deposits of the latter being particularly fine.

The Rideau is five or six feet higher than it was in a state of nature, owing to the work of building the canal, and as that depth of water would cover many yards of shore, there must be a large amount of valuable material hidden from our sight.

Spear and arrow points were the most numerous among the specimens and were of the usual variety as to shape and material. A large number of spear points, commonly so called, are just as likely to have been knives. They were provided with notches, for fastening the weapon to a handle, but in some cases one side was nearly straight and the other curved. If they had been intended as spear heads one would expect both sides to be alike. This can not be regarded as altogether accidental, for the more specimens one studies the less apt one becomes to regard a certain form as an accident in making. The Indian workman did not resemble the modern one in one particular. He was not conventional. He followed no set rule. No two specimens can be found exactly alike, and it cannot be because he did not desire to make them so. For the workman who can, with another stone shape a piece of rude flint into a weapon so perfect as an arrow or spear could also produce two or more exactly alike.

It shows that effect was sought from the first and with other evidence proves the directness of the savage mind.

Many spear heads were found near the water's edge and were no doubt used on a long handle for spearing fish. One feature of these was that so many of them were broken transversely at about an inch from the notches. Can this be because the handle was split and each side extended along the spear head making a point of least resistance? It is quite possible that these spears may have been used for the purpose of spearing through the ice mink, musk-rat, beaver and otter.

The arrows were more numerous than any other specimens, and were generally of the elongated leaf pattern, but other kinds were also found. The material used in the arrows was found in abundance about the lake, flint, chert, slate etc., There were many sizes, some so large that one would hesitate to say that they could be shot with sufficient force to be effective, and yet they seem too small to be used as spears.

To us the arrow seems but a poor weapon, but it had one great advantage over the gun with its loud explosion. As it made no noise the hunter must often have been able to secure more than one chance at his prey.

A few very peculiar specimens of a flint implement were found that must be regarded as a skinning or scraping tool. They were about  $\frac{1}{2}$  or  $\frac{1}{4}$  of an inch in thickness, broad at the base and coming to a point at the other end, the pointed extremity being curved so that at this end one side was concave the other convex. The edges were very sharp, and by taking one between the thumb and finger the flesh or skin could be laid open as effectually as with a knife. It could readily be used as an instrument for scraping an arrow-shaft or for cleaning small particles of flesh from a skin.

A few small specimens of slate were found at one place in particular on the lake, that at first were regarded as accidental until after finding several of the same kind. They were about  $\frac{1}{2}$  of an inch thick, and in the shape of an irregular square about one inch in size. Every edge was finished, but no effort seemed to have been made to produce a cutting edge as on other slate tools. Finding them about the lake, suggested the idea that they may have been used for scaling fish, if, indeed, the natives took that trouble in preparing fish for food.

Celts were found in abundance and variety. The majority of them were polished, but few being found of the chipped variety, the same lack of conventionality was found among the celts as in other specimens. From the fact that so many broken celts were found, some fractured transversely, others split, leads to the conclusion that one of their uses was for striking hard substances.

From the large number of celts found and from their many different sizes, one would naturally think that this implement was a general-purpose tool about the aboriginal lodge. To those restricted to the use of few tools, this would serve many purposes, breaking or chopping ice, breaking bones to obtain the marrow, digging edible roots, detaching the bark from a tree, as a wedge to split wood, as well as being of great service in the chase or in war. Why this implement is popularly regarded as one used exclusively for skinning deer, it is difficult to understand.

There were a few grooved axes found. One in particular deserves mention on account of its perfection. The material is red granite, and it weighs a little under four pounds. It has a groove around it at about one third its length, and another groove running lengthwise from the base to the groove around it, being for the purpose of fastening or tightening the handle on. Its width is about twice its thickness, and it had no cutting edge. From this fact it should no doubt, be regarded more as a hammer; the other grooved axes had well defined edges, but in no case was the groove so marked as in the granite specimen. (Fig. 41.)

Dr. Abbott, in his "Primitive Industries" speaks of grooved axes being very commonly found in New Jersey. Among the specimens found here, they were very rare and their presence here is probably a result of barter between tribes, or possibly the result of the fortune of war, some brave from a distance being overcome and leaving his worldly goods to his conquerors. This may account for other implements found here, but made of material not to be obtained in this locality.

Gouges were secured but nothing remarkable was noticed among them. They were found, as a rule, away from the water, and this fact should have some bearing on the use they were intended for. Why some gouges were hollowed out the whole of their length, and others had but one end hollowed, is another point of interest. It certainly could not have been a matter of unconcern as the work in one case is much greater than the other. There must have been some object in producing this difference as all the work of the Indian shows a decided purpose.

Slickstones or scrapers were quite numerous, some of slate, others of sandstone. Those of slate were very often broken, but there was generally sufficient left to show their original shape and the purpose for which they were intended.

A few drills or awls were found, one only being of bone. The flint awls were of two principal shapes, the club based, and those that resemble an arrow to some extent. From the fact that not many persons would recognize the flat drill, with its small points may account for so few being found. The attention of those in search for specimens, was called to the fact, that every stone with a worked or chipped edge was valuable, and it resulted in securing many more things than otherwise would have been found. Among the drills was one of bone, and this was the only specimen of bone obtained during the summer. It is more than likely that other bone implements were overlooked.

Comparatively few ornaments were secured. Those found were of soapstone and slate, and were of the usual form, nothing remarkable being discovered.

Part of one discoidal stone was found. Several pipes were secured, only one being in any way remarkable. This pipe, (Fig. 6) was found at Bob's Lake, over twenty years ago, and is a very perfect piece of native work. The two serpents

are accurately moulded and both possess a degree of life and expression hardly to be looked for under the circumstances. The conception must have been very clearly worked out in the savage mind, before it could take its present form.

One complete clay dish was got, and it was a splendid specimen. The ornamentation on it was of rather an ambitious kind, and must have been the work of a master hand. This dish, (fig. 2) was found some years since, by Mr. Mathew Scott, in a crack in the rock near an old beaver meadow. As to the methods used in ornamentation, it is to be hoped, that another year's work, will throw more light on the subject, by comparing a large number of specimens. From the fact that other clay dishes have been found in this county in recent years, (but which were allowed to be broken) it is confidently expected that more still may be secured and preserved.

Other localities, besides the Rideau Lake are rich in specimens.

In conclusion, it should be said that the work to be done in this section, is but fairly commenced. Quite a respectable number of specimens were secured, but they don't represent a fraction of those remaining in the county that could be obtained with very little trouble. From the first I received the warmest support of every one. With scarcely an exception, all who had specimens gave them to me for the Museum, and the Institute is under a debt of obligation to those who so generously gave up their relics, and, to me, it was a great encouragement to have my efforts in collecting so well received.

Not a few took more than a passing interest in the subject and were of great help in the work. To Mrs. McLaren I am most indebted for the chance of visiting many points of interest about the Rideau.

The engineer and pilot of the Geraldine—Messrs. Geo. Hone and Dick Carpenter—are enthusiastic workers and secured a large number of valuable specimens during the summer. To their enthusiasm they add a degree of intelligence that has been of great help in the work.

W. J. Morris, Esq., of Perth, was also a daily help to me from his intimate knowledge of the county about here.

Mr. John S. Tullis, of Balderson, furnished me with some valuable information that I hope to make useful in time.

Others who contributed specimens are Thomas Moffat, John P. Fraser, Joseph M. Rogers, James Walker, Daniel McDonald, James Graham, J. F. Kennedy, L.D.S., Master Austin Keays, Dr. E. M. Morgan; Master Harry Morris, of Perth, Wm. Richard McLean and Master Robert McLean, of Rideau Centre. Peter Campbell, Wm. H. Blair, John F. Moore, John Coutts, Mrs. Smith, Mrs. A. Palmer, Cyrus Davis, George Ritchie, Charles Mackey, Matthew B. Scott, T. B. Scott, James McLaren, James King, Andrew McCoy, Andrew Paul, Andrew Drummond, Mrs. R. C. Sherritt, Miles Brown and John Poole.

#### ADDITIONS TO THE MUSEUM.

The following is a list of the principal additions to the museum during the year.

Per Dr. T. W. Beeman, Perth :—

Copper spear, with socket.—Mr. Andrew Paul.

Copper spear, with socket.—Mr. W. J. Morris.

- Stone axe.—Mr. Harry Morris.  
 Stone axe.—Mr. J. S. Wilson.  
 Stone axe.—Mr. Jas. King.  
 2 Stone axes.—Mr. Cyrus Davis.  
 6 Stone axes.—Mr. Nelson Covell.  
 Stone axe.—Dr. E. M. Morgan.  
 12 Stone axes.—Dr. T. W. Beeman and "Geraldine" party.  
 2 Iron tomahawks.—Mr. Andrew McCoy.  
 Quartzite arrow-tip.—Mr. Andrew Drummond.  
 Coarse jasper scraper.— " "  
 Chert arrow-tip.— " "  
 Fragment of gypsum (worked).— "  
 Chert arrow-head.—Mrs. Sherritt.  
 Lenticular quartz specimen, roughly chipped.—Dr. T. W. Beeman.  
 6 "Flints."—Mr. Nelson Covell.  
 Arrow-head.—Mr. James King.  
 6 "Flints."—Dr. T. W. Beeman.  
 Quantity of flakes and chips.—Dr. T. W. Beeman.  
 Quantity of broken pottery.— " "  
 3 Stone axes.—Mr. James McLaren.  
 Stone axe.—Mr. George Hone.  
 Stone axe, very large.—Mr. Chas. Mackey.  
 3 Stone axes, plain.—Mr. John P. Fraser.  
 Stone axe, grooved.—Mr. John P. Fraser.  
 Stone axe, Huronian slate.— "  
 Stone axe.—Mr. J. F. Kennedy.  
 Stone axe.—Mr. Jas. Graham.  
 2 Stone axes.—Mr. Thos. Moffat.  
 Stone axe, part.—Mr. J. W. Borrowman.  
 Part of discoidal stone.—Mr. Geo. Hone.  
 Gouge, slate, small.—Mr. Jas. Jackson.  
 Stone gouge.—Mrs. Smith, Oliver's Ferry.  
 Stone gouge.—Mr. W. H. Blair.  
 Base of flat-bottomed steatite pipe.—Mr. Daniel McDonald.  
 Gorget, slate, two holes.—Mr. Jas. Walker.  
 Gorget, fragment.—Mr. John P. Fraser.  
 Gorget, fragment.—Mr. John Coutts.  
 Spear-head or knife, slate.—Mr. Wm. R. McLean.  
 Pestle, double-ended, California.—Mr. Chas. Mackey.  
 Opalescent quartz arrow-head, Dakota.—Mrs. Peter McLaren.  
 2 small knife-like flints.—Mr. Thos. Moffat.  
 Broken pipe-tomahawk.—Mr. Chas. Mackey.  
 Specimens of arrow-heads.—Messrs. Matthew Scott, Thos. Moffat, Robert. McLean, John F. Moore, Alex. Palmer, "Geraldine" party and Dr. T. W. Beeman.  
 Beautiful quartzite arrow-heads have been presented by Messrs. W. J. Morris, Thos. Moffat and John F. Moore.  
 Pipe bowl, steatite.—Dr. T. W. Beeman.  
 2 Stone hammers.—Mr. Austin Keays.

From Addington County a few specimens have been received, the most valuable of which is the blocked-out form of a large pipe in soapstone. (See fig. 28.) This unique specimen was found on the farm of Mr. Jos. B. Lucas, and by him kindly presented to the museum, along with 3 stone axes and 2 gouges.



Through the kindness of Dr. M. I. Beeman, of Centreville, we have procured a few other specimens from the same county: and a fine gouge, from Elizabethtown, Leeds, comes from Mr. J. M. Rogers. Perth.

Per Mr. Alan Macdougall, C. E.:

Hydah blanket.—Mr. T. Sydney, Dobbin, Esquimalt.

Hydah fish-line and fish-hook.—Mr. T. Sydney, Dobbin, Esquimalt.

Blade of jade axe. " "

Catlinite pipe, Nottawasaga.—Mr. Bend, Penetanguishene.

Gouge chisel, grooved.—Mr. Jas. McCrosson, Warden, Reformatory, Penetanguishene.

Stone pipe (cast).—Mr. J. H. Crouse, Brantford.

Paint cup (cast). " "

2 Bird amulets (casts). " "

Ceremonial axe (cast). " "

Gorget, Huronian slate.—Capt. David Allan, Elora.

140 Bone awls or needles.—Mr. W. H. Long.

26 Rubbed deer tarsal bones. " "

10 Worked bone fragments. " "

135 Bone beads. " "

1 Carved bone. " "

1 Piece of worked horn. " "

10 Horn tips, worked. " "

8 Bear's teeth, bored. " "

1 Bear's tooth, notched. " "

2 Bear's teeth, plain. " "

40 Clay pipes, mostly imperfect. " "

7 Stone pipes, whole. " "

9 Stone discs, plain. " "

2 Stone discs, bored. " "

8 Clay discs, from broken pottery. " "

1 Small clay vessel. " "

22 Well marked fragments of pottery. " "

1 Gorget. " "

50 "Flints." " "

5 Iron tools. " "

51 Stone axes. " "

10 Miscellaneous. " "

50 Pieces of wampum.—Mr. E. C. Waters.

30 Clay pipes, imperfect. " "

1 Clay pipe, perfect. " "

1 Bird amulet. " "

1 Gorget. " "

1 Ceremonial axe, slate. " "

1 Pendant, slate. " "

4 Various, slate. " "

11 Slate fragments, partly worked. " "

400 "Flints." " "

34 Hammer stones, rough. " "

15 " " and blocks. " "

31 Rubbing stones. " "

3 Grooved axes. " "

60 Stone axes, plain. "

30 Bone pins.—	Mr. E. C. Waters.
22 Bone awls or needles.	“
4 Needles, flat with eyes.	“
91 Bone beads.	“
4 Bone spears, barbed.	“
3 Combs, imperfect.	“
50 Bone, various.	“
3 Horn chisels.	“
1 Horn, grooved.	“
6 Bones, split.	“
13 Unio shells, worked.	“
3 Shell ornaments, sub-tropical.	“
3 Stone beads.	“
1 Restored clay pot.	“
50 Various.	“
Quantity of broken pottery from Baptiste Lake.	
6 Bone tools, use unknown.	
2 Bone combs.—	Mr. E. C. Waters.
1 Gouge.	“
2 Stone axes.	“
1 Wooden ladle.	“
Hematite (war paint).	“
Birch bark basket, pieces.	“
5 Pottery fragments.	“
1 Arrow of quartzite.	“
3 Pieces plumbago.	“
6 Iron pyrites.	“
6 Sheet copper arrow-heads.	“
12 Copper fragments.	“
10 Iron tools, imperfect.	“
3 Small copper vessels.	“
6 Stone pipes.	“
2 Clay pipes.	“
300 Copper, glass and shell beads.	“
Copper spike.—Capt. J. G. Spain, Simcoe.	
Copper arrow-head.	“
28 Gorgets, whole and broken.—Capt. J. G. Spain.	
3 Bird amulets.	“
1 Bar amulet.	“
1 Paint cup.	“
4 Stone tubes.	“
2 “Butterfly” stones.	“
4 Slate tools.	“
1 Stone finger-ring.	“
7 Stone pipes.	“
3 Unfinished stone pipes.	“
20 Clay pipes.	“
5 Discoidal stones.	“
16 Bone needles.	“
5 Bone beads.	“
3 Portions of human leg bones, perforated.	“
2 Shell ornaments.	“
8 Flint drills.	“

400 "Flints" of various sizes.—Capt. J. G. Spain.		
175 Stone axes.	"	
60 Fragments of pottery.	"	
8 Gouges.	"	
12 Rubbing stones.	"	
Unfinished gypsum pipe.	"	
Stone pipe, Kansas.	"	
21 Miscellaneous.	"	
1 slate spear head.—Mr. W. H. Blake.		
45 Clay pipes, imperfect.—Wm. and D. Melville.		
82 Clay pipe stems.	"	"
13 Clay pipes, imperfect.—Mr. David Boyle.		
25 Clay pipe stems.	"	"
1 Gouge.	"	"
7 Stone axes.	"	"
15 Flints.	"	"
1 Flint arrow-tip, Scotland.	"	"
5 Bone beads.	"	"
56 Miscellaneous.	"	"
6 Arrow-heads, New Jersey.	Mr. Jas. Bolan, Springfield, Mass.	
Small pair of brass compasses from Fort Ste. Marie.—River Wye.		
2 Skulls from Mounds, Arkansas.—Mr. C. W. Riggs.		
27 Pieces of pottery, more or less whole.—Mr. C. W. Riggs.		
3 Skulls from British Columbia.—Mr. W. H. Jones, Vancouver.		
Stone axe.—Mr. Wm. Findlay, Onondaga.		
Stone pipe, Manitoba.—Dr. T. W. Beeman.		
Flint scrapers.—Mr. T. H. Powell, London, England.		
2 Angle-sided axes.—Mr. Cyrenius Bearss.		
1 Smoothly worked straight sided stone.—Mr. Cyrenius Bearss.		
2 plain axes.	"	"
1 grooved axe.	"	"
1 Gouge.	"	"
1 very fine gorget or tablet.	"	"
1 large slate "Slick" or hoe.—Mr. Archibald Riddell.		
1 Soapstone pipe, Lake Weslemcoon.—Dr. T. A. Beeman.		



## POTTERY.

The large pot shown by the diagram is really a thing of "shreds and patches," the pieces having been carefully put together by Mr. E. C. Waters, who also eked out deficiencies with plaster of Paris for the purpose of restoring the complete outline. The work is well done, enabling us to appreciate the beauty and to

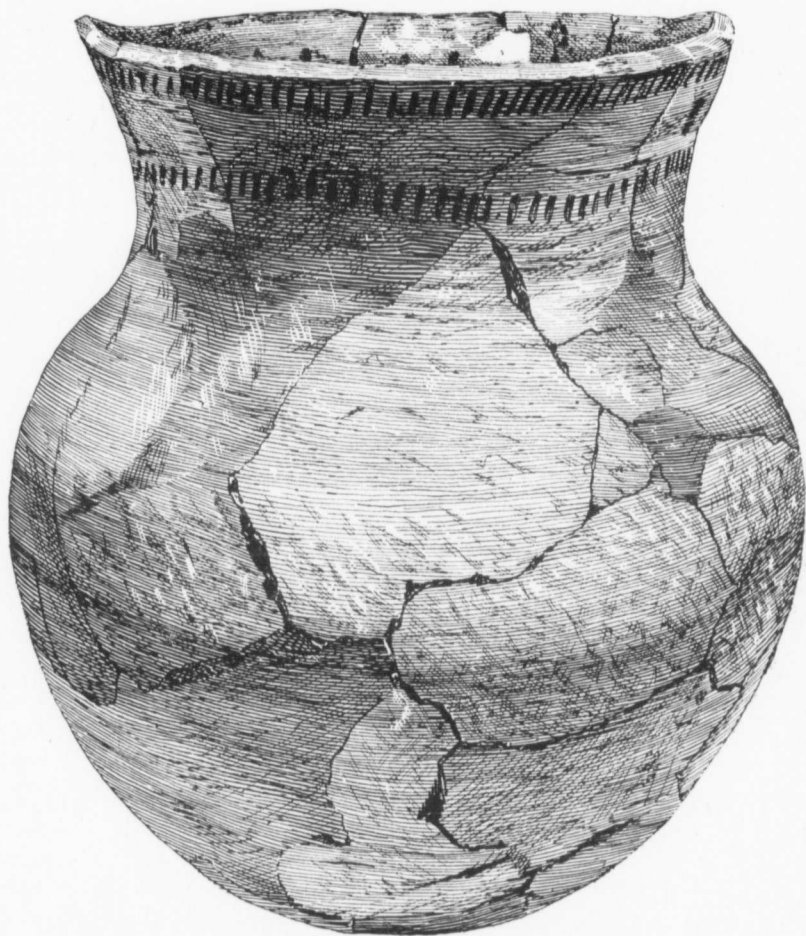


FIG. 1.

estimate the capacity of this ancient piece of pottery. The decorative attempts are as rude as they are simple, and perhaps point to an earlier stage, or a more primitive people than we connect with the more elaborately ornamented exteriors. The vessel represented by figure 1 was found in Brant county by Mr. E. C. Waters. It is ten inches in height and nine inches in diameter.

The piece of pottery-ware represented in the cut (fig. 2) is almost as perfect in form as when it was made. It stands seven inches high and its greatest diameter is eight inches. At the mouth it is slightly elliptical, the short and long diameters being respectively five and a half and six inches. The tooling to form the pattern has been carefully done and the general effect is good. Each line is the result of a single action, that is, no tool like that represented in figure 72 has been used. The scollops that surround the lower edge of the lip have been formed by pinch



FIG. 2.

ing with the finger and thumb, or by pressure with the tip of a finger, the nail mark being plainly discernible at the base of each hollow. The three bars seen on each row of ornament are raised nearly an eighth of an inch above the general level. In color this vessel is of a uniform rusty brown, and the thickness is scarcely three-sixteenths of an inch. The clay appears to have been of fine quality and has been tempered with a much smaller quantity than usual of burnt granitic or gneissoid rock. This handsome pot was found on the farm of Mr. Matthew Scott on the "Scotch Line," not far from the town of Perth.

This small clay vessel (fig. 3) was found in one of the graves in Herschell township by Dr. T. A. Beeman and Mr. J. Robins. In form and finish it is much ruder than figure 4, from the same locality. Its greatest diameter is four and three-



FIG. 3.

fourth inches. Little attempt has been made to ornament the neck, but the pattern on the body of the vessel is made with considerable accuracy and is somewhat unique.



FIG. 4.

Figure 4 represents another vessel from Baptiste Lake, found by Dr. T. A. Beeman, and presented to the museum by Dr. T. W. Beeman. This specimen is somewhat oval in the body, and decidedly so in the neck, on account of the pro-

longation that has been made to extend beyond the ear, if ear it be, and not merely an ornament. The arrangement of lines on figure 4 forms a very simple pattern, quite unlike anything on clay in our possession. The material and finish of this vessel are nearly as good as those of the specimen from the county of Lanark (Fig. 2). Its thickness is pretty uniform and averages not more than three-sixteenths of an inch.



FIG. 5.  
(Full Size.)

This smallest of small clay vessels, (fig. 5) we may readily suppose, was only a toy. A bit of clay has been hastily moulded on the end of a finger and burnt, most likely, along with some larger articles. Not only does the shape of the hole correspond with that of the first joint of the finger, but the impression made by the nail may still be distinguished. Township of Whitchurch. Mr. W. G. Long.

#### CLAY PIPES.

This illustration gives a good idea of a serpent or snake pipe found by Mr. T. B. Scott of the Scotch Line, near the town of Perth. As a piece of clay modeling it is remarkable for its boldness of design, if not so much for the delicacy of its execution. Two intertwined snakes form the bowl, their tails extending along the stem fully an inch in the present imperfect condition of the pipe, and



FIG. 6. (Nearly Full Size.)

perhaps twice that distance originally. The heads are well formed, the mouths clearly cut, and the eyes deeply pitted as if made by the pressure of some round and flat-ended tool. Diagonal lines, not very regularly made, across the body, serve to represent scales. It is a pity that this pipe has lost a portion of its stem, perhaps not less than two inches. We are deeply indebted to Mr. T. B. Scott for placing this and several other specimens in our cases.

Fig. 7 is a very good cut of the only perfect square-mouthed clay pipe in our collection, which includes nearly forty in a fragmentary condition. As most of these were found in Nottawasaga, this type of pipe is known as the Huron Pipe, *par excellence*. The specimen figured here was found by Mr. Robins on the Baptiste Lake burial ground, situated on the farm of Mr. Mulcahy in Herschell township.

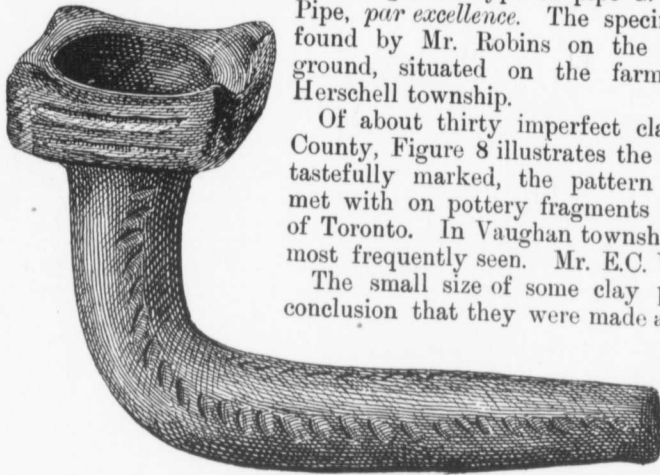


FIG. 7. (Full Size).

Of about thirty imperfect clay pipes from Brant County, Figure 8 illustrates the only one that is at all tastefully marked, the pattern being one commonly met with on pottery fragments in the neighborhood of Toronto. In Vaughan township this is the pattern most frequently seen. Mr. E.C. Waters.

The small size of some clay pipes has led to the conclusion that they were made as toys for the use of children. Occasionally such pipes are not only small, but they are so rude in form as to make it tolerably clear that children were

themselves the artificers. Figures 9 and 10 illustrate both kinds. The former is the work of a master hand, and the clay has been carefully tempered with powdered shell. The bowl is elliptical, the longer axis being at right



FIG. 8. (Full Size).



(FIG. 9. ( $\frac{2}{3}$  Size).



FIG. 10. ( $\frac{1}{3}$  Size).

angles to the stem. The cavity in this pipe is large enough to have rendered it, though on a small scale, a man's pipe. The bowl of figure 10 will scarcely admit the little finger, and the stem-hole is no larger than a common pin. The clay has not been tempered in any way. Both form part of the collection made by Capt. Spain in Norfolk County.

The half bat-like human face shown at figure 11 is on part of a pipe found in York township by Mr. W. G. Long. The head is placed with good effect, like a medallion, on the side of the bowl, with little more than the ear-like appendages extending above the edge. As in many, perhaps most of such clay pipes, the face is made to look towards the smoker.

The workmanship, or, if it may be so expressed, the art, exemplified in figure 12 is different from anything else in the museum. What the nose was like we



may only surmise, for little of it remains. The treatment of the eyes is quite uncommon. An oval depression about one millimetre in depth has been formed, in the centre of which is an elevation deeply punctured. The hollow to repre-



FIG. 11. (Full Size)



FIG. 12. (Full Size).



FIG. 13. (Full Size).

sent the eye has been made with a pointed tool, inserted three times side by side. The mouth has been formed in the same way, and it is the septa of clay remaining between the punctures that in the one case makes it appear that an attempt has been made to represent eye-balls, and in the other case, teeth. There is no attempt to form lips. The surface is smooth and well finished. York township. Mr. W. G. Long.

A not uncommon design on clay pipes is that of a man whose head terminates in a peak, and whose face, extending above the lip of the bowl, has a simian appearance from having been moulded by a finger-pinch. Sometimes one hand rests on the breast while the other extends to the mouth, and sometimes both reach the mouth. The legs in such pipes are very much conventionalised, and often merge into scalloped ribs running along the stem. Figure 13 is in many respects an improvement on this design so far as the fragmentary specimen allows us to judge. Unfortunately the head is missing, but the arms and hands are moulded with an amount of graphic rudeness not usual in this type. Teeth, fingers, and toes were seldom attempted by the Indian workman. In figure 13 the fingers are represented, but the left hand is much larger than the right. Posteriorly the legs are in fair relief, but in front they scarcely stand out beyond the body of the bowl, and are footless. The back of the figure forms a sharp angle, and is neatly impressed with a row of small dots. York township. Mr. W. G. Long.



FIG. 14. (Half Size).

As a rule the Indian maker of clay pipes did not display much of his fine work on the stems, which are generally round and perfectly plain. Figure 14 illustrates an exception. With one convex side, and two flat ones, meeting in a rib, this stem is a singular one. It is two inches and a half long, and an inch wide at the larger end. Brant County. Mr. E. C. Waters.

## STONE PIPES

The beautiful "white stone" pipe figured here is an exceedingly rare and correspondingly interesting specimen. Soft in its nature this stone readily weathers, and thus loses any sharpness of outline that carved specimens may have once possessed. This pipe is unusually well-preserved, especially on the side shown in the engraving. Despite the appearance of the head, it is probable that the animal whose form extends above the bowl, and more than half way along the stem was intended to represent a lizard. We are indebted for this excellent specimen of the

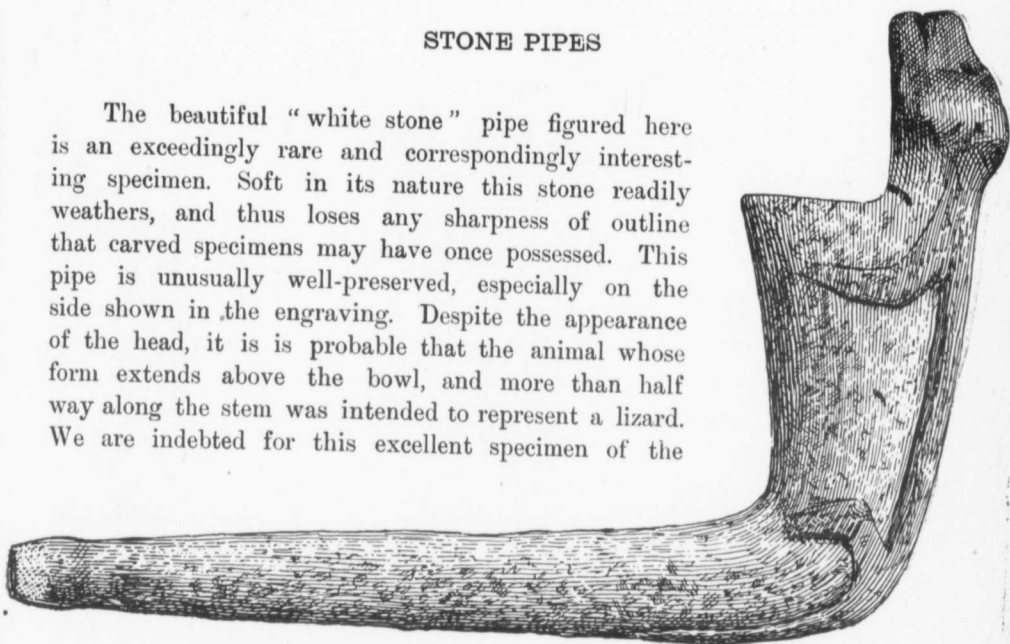


FIG. 15. (Nearly Full Size).

"white stone" pipe to the kindness of Mr. Archibald Riddell, who took it from one of the graves in the Lake Baptiste burying-ground, some days before I reached the place.

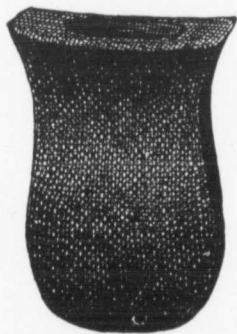


FIG. 16. ( $\frac{2}{3}$  Size).



FIG. 17. ( $\frac{2}{3}$  Size).

Figs. 16 to 20 illustrate five pipes from Baptiste Lake. The patterns are not common ones. All are of steatite except Fig. 16, which is made of a rich.



brown, compact argillite. Figure 16 too, differs from the others in having the sides form sharp angles with one another. With the exception of Figure 20, all



FIG. 19. ( $\frac{2}{3}$  Size).

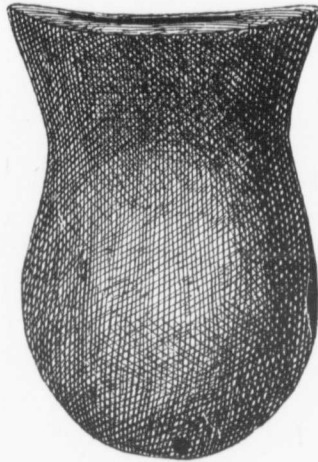


FIG. 18. ( $\frac{2}{3}$  Size).

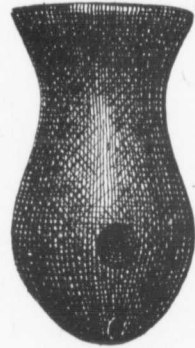


FIG. 20. ( $\frac{2}{3}$  Size).

these pipes are, in cross section about twice as long as they are wide—a similar section of Figure 20 is perfectly circular. Figures 17 and 18 which most closely resemble each other in shape, seem also to have been made from the same piece of material, of a pale, yellow tint. Figure 19 is darker in color with a shade of brown, and Figure 20 is a mottled gray. All have small holes at the base for securing them to their stems, and in Figure 19 a beginning has been made from



FIG. 21. ( $\frac{2}{3}$  Size).

each side in the making of a second hole. Only in Figure 20 is the bowl-hole perfectly round, it is nearly so in figure 18, quite oval in Figure 17 and in Figure 19, in which the wall of the bowl has been cut away quite thin so as to form in this smallest of all these pipes a cavity of the largest capacity. The specimens here figured were found by Messrs. Robins and Mulcahy, Dr. T. A. Beeman and myself at different times.

Figure 21 represents one of many valuable specimens found by Dr. T. W. Beeman on the shores of Lake Rideau. It is of a dark brown steatite, and remarkable for the accuracy with which it is formed. Enough of the stem is left to show that it was of the flattened variety. In width it exceeds the diameter of the bowl about one-fourth of an inch, measuring an inch and an eighth across, while it is only five sixteenths of an inch in thickness. The edges of the stem are delicately ornamented with plain zig-zag lines.

Figure 22 illustrates a somewhat unusual form of catlinite pipe found in the Township of Nottawasaga. It has not even a suspicion of the modern in its form. Everything in the workmanship points to a time anterior to the manu-

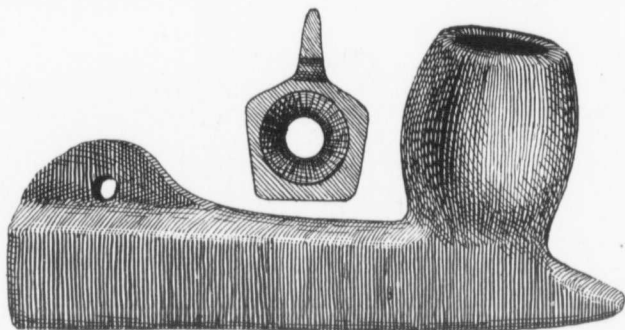


FIG. 22. ( $\frac{2}{3}$  Size).

facture of "curiosities." A cross section of the end of the stem is shown. The only other catlinite specimen from this township is the Beecroft pipe. (See Can. Inst. Report, 1886-87, p. 28.) The extremely beautiful specimen here figured was presented to the Provincial Archaeological Museum by Mr. Bend, an officer of the Reformatory at Penetanguishene.

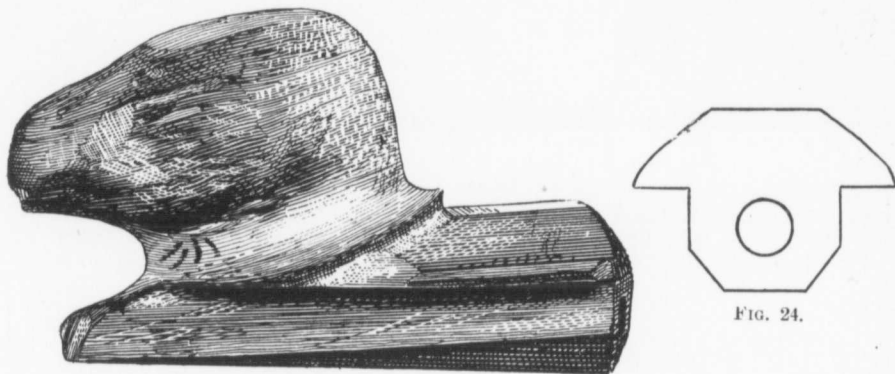


FIG. 23. ( $\frac{2}{3}$  Size).

Figure 23 represents an unfinished pipe found in Norfolk County. The workmanship is a somewhat curious combination of Indian and European. The contour of the head in its rough condition is suggestive of the eagle. The material is a brown argillaceous stone, much like that of which figure 16 is formed.

Fig. 24 shows a cross section of the stem. Capt. J. G. Spain, Simcoe.

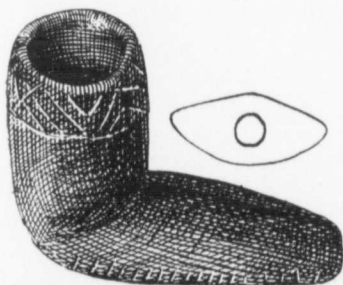


FIG. 24.

A very pretty pipe, apparently made of limestone, is here figured, nearly full size. The attempt at ornamentation round the margin is of the rudest. The chief peculiarity of this pipe is the stem, a cross section of which is shown as it would appear close to the head. Each edge of the stem is relieved with a series of notches sharply cut—fourteen on one side and seventeen on the other. Capt. J. G. Spain, Norfolk County

This excellent pipe (Fig. 26) was found a few miles south of Penetanguishene, and was procured from Mr. A. C. Osborne, one of our members, who resides in that town. It is of steatite, mainly drab in color, but shading into a dark gray



FIG. 26. (Full Size.)

at the back, the face hands and breast being almost black. The maker of this pipe had some pretensions to anatomical accuracy in his treatment of the chin, wrists and ankles. He has even been careful to carve the feet in-toed, according to a well known Indian characteristic. But with all this care in these and some other respects, he has failed to produce thumbs and great toes.

I am indebted to Prof. W. H. Ellis, M.D., for the suggestion that this pipe represents a man, with a bundle on his back, taking a rest.

It is worthy of note that the only other hatted pipe (fragmentary) in our possession was found within a short distance of the place where fig. 26 was picked up, (see Can. Inst. Report for 1890-91; fig. 79, p. 34), in which case, however, there is a distinction between the crown and the rim of the head-dress. A hat or cap very similar to that shown on the Penetanguishene pipe appears on a carved stone head from

the Dwyer farm in Beverly township, (see Can. Inst. Report for 1887-88 fig. 70, p. 46).

We have pipes of steatite, catlinite, "whitstone," common limestone, marble, and even of sandstone, as well as of bone; but the unfinished specimen repre-

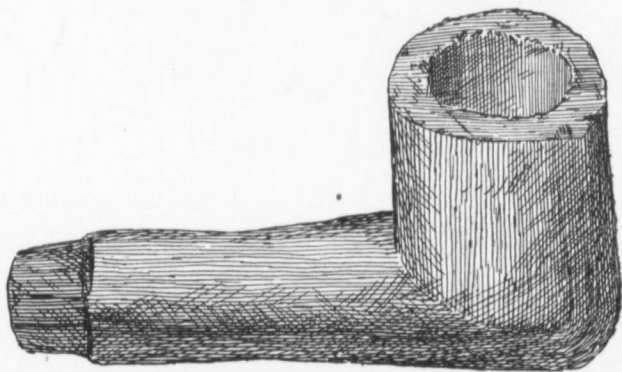


FIG. 27. (Nearly Full Size.)

sented by fig. 27 is the only one of gypsum. It is three and a half inches long; the bowl (nearly an inch and a quarter, outside diameter) has been bored to its full depth, and is three-fourths of an inch in diameter. The stem, in cross section, is mainly round, only the lower side being flattened. At the end it is roughly

squared, as if to form a mouthpiece, but there is no stem hole—only the merest beginning of one. The specimen in question was found on the St. Clair Flats, and forms part of the Spain collection.

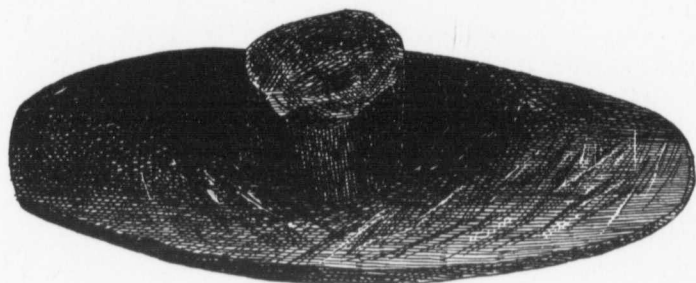


FIG. 28. (About  $\frac{1}{4}$  Size).

As has been mentioned previously in these reports, it was the practice of the Indians to "block out" the various articles of stone as nearly as possible to the required size before boring any holes that were necessary. The unfinished gypsum pipe (fig. 27) is one example, and the accompanying illustration is another. On more than one account this is a valuable specimen for museum purposes. The size itself is somewhat out of the common, as the base measures  $7\frac{1}{4}$  inches long and  $2\frac{1}{2}$  wide; while the bowl portion stands  $1\frac{7}{8}$  inches above the upper side of the base or stem part. But the pattern is more noteworthy still, for it belongs to a type better known in the region of the mounds, and which is designated by American archæologists as a "monitor" pipe. The stone itself is steatite of a very soft quality, and the surface appears to have been stained black.

The end intended for the stem is five-eighths of an inch thick, the other being only three-eighths of an inch in thickness. That this is an unfinished pipe is undoubted, and we can only conjecture why the work of boring has not even been begun. Perhaps it was procured in its present condition by barter or plunder from some southern source, and was lost before an opportunity presented itself for the boring operations to be performed.

This very interesting specimen was found on lot 36, concession 5, township of Camden, by Mr. Joseph Lucas, the intelligent proprietor of the farm, Mr. and Mrs. Lucas generously presented this, and other specimens elsewhere enumerated, to the museum.

## FLAKED IMPLEMENTS.

Popularly, all "flints" are regarded as having been made for shooting purposes, or, if large, to be used as spears only. In reality there must have been many other uses to which flaked "flints" or chert objects were applied, although the shapes correspond largely with the typical arrow-head. It is, for example, quite evident that articles of this kind, from eight inches to a foot in



FIG. 29.  
(Full Size).



FIG. 30.  
(Full Size).



FIG. 31.  
(Full Size).



FIG. 32.  
Full Size).



FIG. 33.  
(Full Size).

length, were not intended for either the one purpose or the other, and more especially are we warranted in coming to this conclusion when they are from three to six inches in breadth. In such cases they are usually regarded as spades or hoes. It is equally certain that many "flints" of smaller size were neither arrows nor spears. When serrated they were probably used as saws, and, no doubt, many were employed for cutting purposes just as we use pocket-knives.

At best, when shooting with flaked arrow-tips, the result must have been very uncertain, unless the aim was taken from close quarters, or the object a pretty large one.

Figures 29 to 33 show the curvature possessed by specimens in our cases. Shooting, with such specimens, must have been wide of the mark, unless the intention was to send the shaft round a tree! With a head like the one represented by fig. 29 the motion resulting from a shot would resemble that of a boomerang. In savage economy there were many uses to which such curved articles might be applied, in scraping, splitting, carving, cutting and dressing stone, wood, bone or



furs. A very suggestive use is that of the scalping knife, but it is not at all certain that in pre-European days the natives carried a special weapon to "raise the hair." If they did, perhaps the sewere real scalping knives. Most of the curved "flints" are much flatter, transversely, on the concave than on the convex side,



FIG. 35.

FIG. 36. ( $\frac{1}{2}$  Size).FIG. 37. ( $\frac{1}{2}$  Size).

especially near the point. Figure 35, somewhat reduced, shows a side view of fig. 32, which makes it absolutely certain that the specimen was made for any other purpose but that of shooting.

Fig. 29 is provided with a deeply notched, or semi-barbed neck. Figs. 30 and 31 are leaf-shaped, and fig. 33 has a plain straight-sided neck. Norfolk County, Capt. J. G. Spain.

An unusual form of "flint" is shown at figure 36 in a slightly reduced form. It is not easy to decide whether the pattern is the result of mere whim, or was intended to serve some purpose. The smaller end is quite as carefully worked as the larger one, and it may have been the intention to make the ends reversible.

This specimen is rather thinner in proportion to its length than we commonly find, and all the edges are sharp, without any signs of usage. Capt. J. G. Spain, Norfolk County.



FIG. 39. (Full Size).

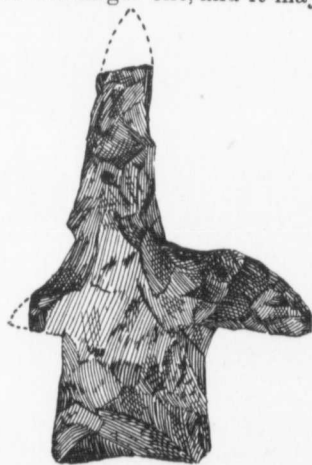


FIG. 38. (Full Size).

"Scrapers" are not found in Canada in anything like such quantities as in many countries of Europe. In the collection from Norfolk county there are twenty or more, and mostly provided with necks, as if they were "degraded" arrow tips. Most of the European articles of this kind are roughly discoidal or elliptical, flat on one side and convex on the other. This type is also found here, besides another, which has a strong straight neck. The working edge of figure 37 is worn smooth.

Among oddly chipped flints, figure 38 is worthy of a place. It does not appear ever to have been even roughly symmetrical—the dotted lines may indicate the original shape and size of the weapon. From Brant county. Mr. E. C. Waters.

Figure 39 represents a chip of chert carefully worked down to a fine point, no doubt for use as a drill. Some such tool must have been employed to bore holes in wampum and other small articles. Brant county. Mr. E. C. Waters.

#### CELTS, CHISELS, GOUGES.

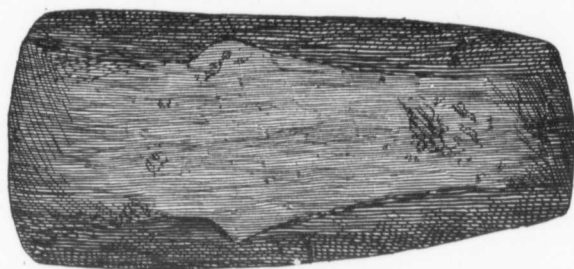


FIG. 40. ( $\frac{1}{4}$  Size).

Among the many hundreds of celts and similar implements in the museum' there is nothing to correspond with the specimen represented by figure 40' except in general outline and material. The remarkable feature connected with this object is the symmetrical pattern in relief which has been carefully formed on one side. Although not more than a millimetre in height, it indicates no small amount of labor, and more than a little mechanical skill to produce such a result. The material is a very dark gray primitive rock, homogeneous in composition, and so hard as to scratch glass readily. The great amount of work bestowed on this article suggests a few queries: Was it the property of some distinguished "brave"? Had the design any particular meaning? Was the implement more for ornament than use? Was it made solely for ceremonial purposes? Or, was a special hatchet produced for "burial" in ratification of some important treaty of peace? This unique stone tomahawk was found a short distance north of Norfolk county. Capt. J. G. Spain, Simcoe.

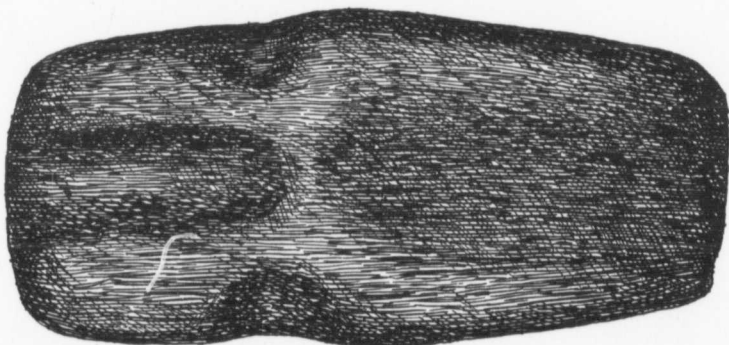


FIG. 41. ( $\frac{1}{4}$  Size).

The tool illustrated by figure 41 was an adze rather than an axe, and is of a pattern comparatively rare in Ontario. The groove for handle attachment is not very deeply cut, and on the side not shown in the engraving no attempt whatever has been made to extend this groove, but as may be seen from the illustration, another groove has been cut lengthwise from the top of the adze to a point nearly in line with the lower

side of the horizontal groove. As I take it that the longitudinal groove was intended to hold a wedge for the purpose of tightening the tool in its wither or sinew-bound handle, the fact that it was cut on a side and not on an edge enables us to see how the implement was used. Another peculiarity of the adze is what I regard as the traces of wear resulting from its friction with the handle when in use, for it is not only unusually smooth on the side shown in figure 41, but the smooth portion is of a pale green hue, suggestive of its having absorbed coloring matter from copper with which it has been in contact. On the opposite side also, the smoothness and greenness are coincident, but to a much less extent. The length of this adze is  $7\frac{3}{4}$  inches. It is made of an exceedingly hard and fine grained, gray granite. The cutting edge is considerably battered, and the pole looks as if it had been employed as a hammer. The exceedingly instructive implement here figured and described was found at the Indian Landing, Lake Rideau, by Mr. John P. Fraser, and by him presented to the Provincial Archæological Museum.

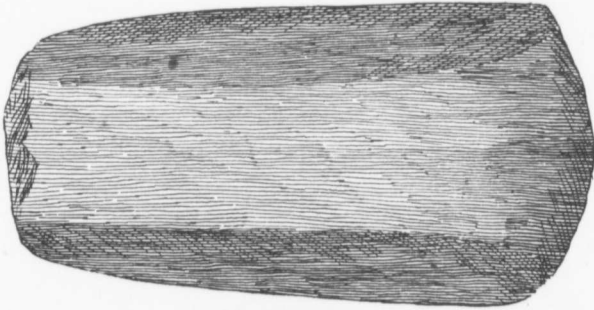


FIG. 42. ( $\frac{3}{8}$  Size).

When describing plain celts, axes or chisels in a general way, it would be perfectly safe to say that transversely they are more or less oval, for even if one side is somewhat flat the opposite side and corners are nearly always rounded. Occasionally a specimen is found whose sides form right angles with each other, but these are rare. Rarer still are specimens like the one figured here, for both sides are flat, and the corners on one side are rubbed down to an angle of forty-five degrees. Figure 43 shows a cross section of this specimen. Humberstone. Mr. Cyrenius Bearss.

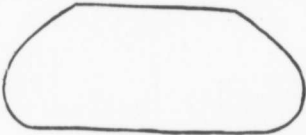


FIG. 43.

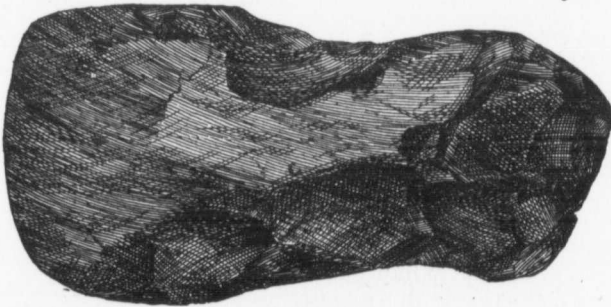


FIG. 44. ( $\frac{1}{4}$  Size).

In figure 44 is represented what is probably an unfinished axe. If it was intended to be used in its present condition, its maker had an eye to utility with-

out any regard for appearances, because, while the blade has been brought to a tolerably good cutting edge, the upper three-fourths of the tool are left in an extremely rude condition of chipping, except that some of the most prominent ridges have been rubbed down as if for comfort in grasping it. This specimen is somewhat singular in another respect, for the material—Huronian slate—was seldom used in the making of axes or other cutting implements. We owe the possession of this valuable specimen to Mr. John P. Fraser, of Perth, who found it on the Lake Rideau shore.

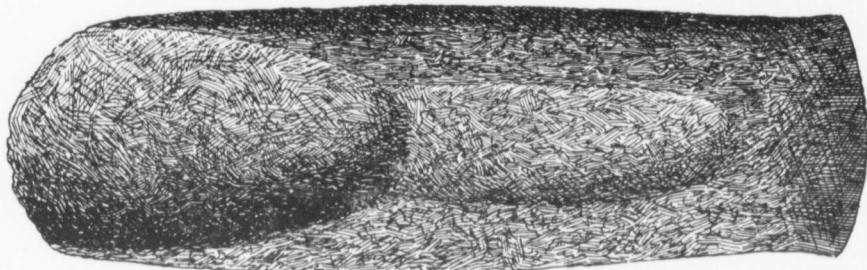


FIG. 45. ( $\frac{3}{4}$  Size).

A unique implement is figured here (fig. 45). It was evidently intended to serve the double purpose of gouge and chisel. The gouge end is peculiarly hollowed, for besides being deeper than usual at the mouth, it is to some extent cup-shaped, and if held at the proper angle it would contain fully a teaspoonful of water. Extending also from the upper or inner end of this deeply cut hollow is a much shallower one, reaching within an inch of the chisel end. The latter possesses still the rough surface, resulting from the pecking process, while the deeper one has been smoothed. The chisel end is almost as singular as the other, on account of the sides of the lip being slightly flared—in other words, the “bit” or cutting edge is a little wider than the body of the tool immediately above it. This end has still an excellent cutting edge, but that of the gouge is considerably battered. This remarkable implement is made from a piece of light gray and close grained, dioritic rock. It was found near Penetanguishene, and was presented to the Museum by Mr. Jas. McCrosson, Warden of the Provincial Reformatory.

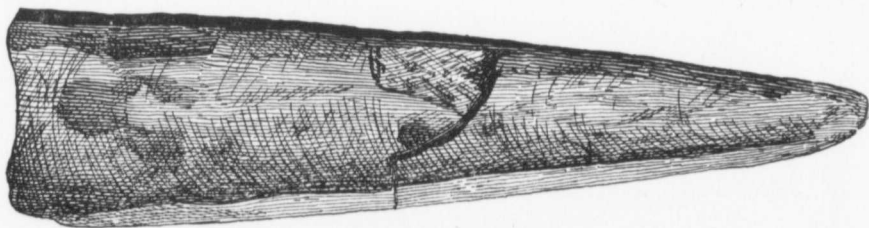


FIG. 46. (Full Size).

What has been in its perfect condition a remarkably beautiful and unusually small gouge is represented by figure 46. It is considerably damaged, but even in its imperfect condition is valuable as suggesting some use not attributed to larger and correspondingly strong specimens. As this one is made of slate it could not have been meant for use where much force or strength was required. It was presented to us by Mr. Jas. Graham, who found it on the shore of Rideau Lake.



### VARIOUS SLATE SPECIMENS.

Perhaps the article represented by figure 47 was a knife—perhaps it was not Argillite does not take a good cutting edge. This specimen was not an arrow-head, for one side is straighter and less sharply ribbed than the other. As a spear it would prove too fragile for use. Unlike many objects of this form and material, it has not a serrated tine. It was found in the township of N. Elmsley by Mr. W. K. McLean.

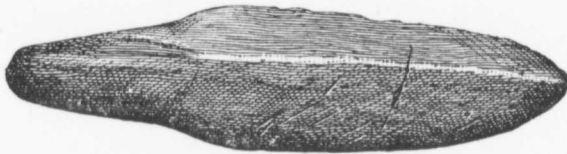


FIG. 47. ( $\frac{2}{3}$  Size).

Figure 48 is of slate, and less than one-fourth of an inch in thickness near the unnotched end. At the opposite end it is only about an eighth of an inch thick. On each side of one end have been cut seven notches, but on the side shown above one of these has been destroyed by means of a splinter. The other end appears never to have been finished, although it is worn quite smooth at the extremity of a fracture. Both edges are sharp, and their concavity suggests that the tool may have been used to "slick" the outside of clay vessels, while the oblique ends may have been employed in making the lines that characterise Indian ceramic adornment. Norfolk county. Capt. J. G. Spain.



FIG. 48. (Full Size).

Insignificant looking as fig. 49 is, the original was not improbably held in high estimation by its owner. In form it may have been intended to represent a bird—the projection at the upper end being meant for a head, while at the lower end are seen the tail (from which a piece has been broken) and the tips of the wings. The outline is not unlike that of the Thunder Bird done in porcupine quill-work, as figured in last year's report. It was most likely worn as a pendant, forming part of a string of beads. The notches suggest its use as record of some kind unless they were made for a purely ornamental purpose, as all the corners are similarly treated, although the marks on two of them have become almost indistinguishable as the result of wear. The stone is a dark red slate, not found in the county of Brant, where this specimen was picked up by Mr. E. C. Waters.



FIG. 49.  
(Full Size).



[AD17. "Gorgets" so-called have been previously figured in the reports of the Institute, but this one (fig. 50) differs in many respects from most of the others in our cases. Originally it has had seven teeth at one end, but the two outside ones have almost disappeared—one apparently from wear, and the other as the

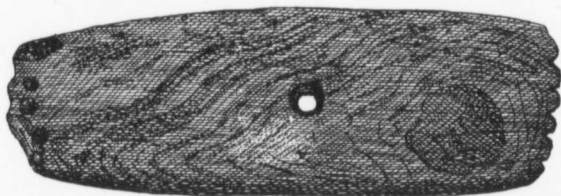


FIG. 50. ( $\frac{1}{3}$  Size).

result of a fracture. Perhaps the worn corner was also broken and afterwards rounded off. The opposite extremity has also been roughly toothed, but it is chiefly noticeable on account of five shallow hollows that have been drilled there.

As is nearly always the case with such articles, the material is of Huronian slate. Norfolk county, Capt. J. G. Spain.

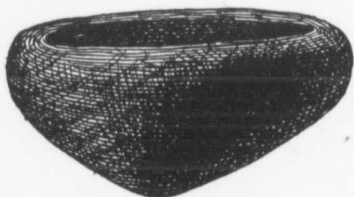


FIG. 51. (Nearly Full Size).

This figure represents what is commonly spoken of as a "paint-cup." It is made of slate, and is neatly worked, although the outside is not quite symmetrical. If the supposition that articles of this kind were used for mixing pigments to be employed in personal decoration, be not the correct one, it is difficult to surmise in what other way they could have been utilised. Norfolk county, Capt. J. G. Spain.

A most singular "bar-amulet" from the same source, is illustrated by figs. 52 and 53. Usually the basal holes pass out diagonally, one at each end, but in this

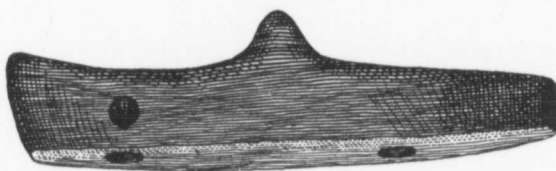


FIG. 52. ( $\frac{1}{3}$  Size).

specimen they pass through the sides. On the upper edge, over the hole to the left, there is just the beginning of a perforation, as if the intention had been to make a connection with the basal hole from that point. In such objects, elevations at

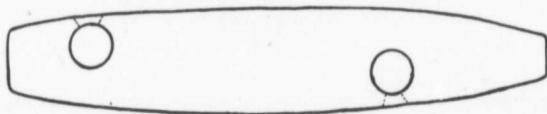


FIG. 53.

one or both ends are not uncommon, but the central knob shown here is unique so far as our collection is concerned. Although each hole in the base is half an

inch in diameter at the mouth, and fully a quarter of an inch in diameter where they enter at the sides, the meeting-points within show apertures scarcely more than one-sixteenth of an inch in diameter with no signs of wear.

The stone of which this odd "bar-amulet" is made is a light brown, un-veined argillite. The finish is only passably good.

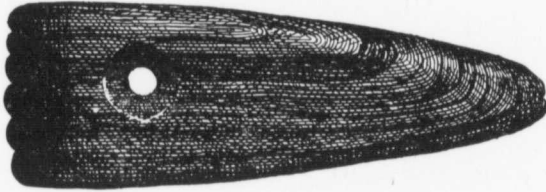


FIG. 54. (Full Size).

Fig. 54 resembles, in some respects, specimens from Middlesex county in the west and Wolfe Island on the east. The position of the hole in all of them is puzzling, being either near the middle or towards the larger end. In the present instance the hole is not only nearer to the large end, but it is considerably to one side. The edge in this specimen, too, is crenated as well as chisel-shaped; in the others it is chisel-shaped and plain, whether sharp or blunt. The stone is Huronian slate. E. C. Waters, Brant county.

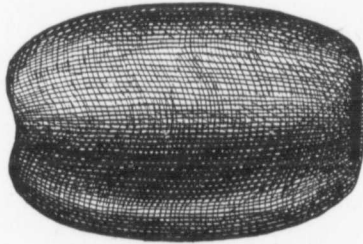


FIG. 55. ( $\frac{3}{4}$  Size).

The tube figured here is of light pea-green, veined steatite. It is two and a half inches long, the hole being about seven-sixteenth inches in diameter. Along one side is a groove fully an inch across at the middle, and so deep that less than an eighth of an inch of material separates it from the hole. Norfolk county, Capt. J. G. Spain.

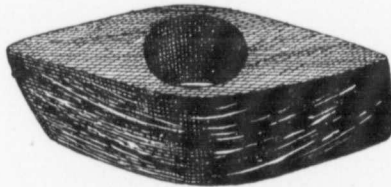


FIG. 56. (Size  $2\frac{1}{4} \times 1\frac{5}{8}$ ).

This may be called, for want of a better name, a small ceremonial axe. The hole is oval,  $\frac{5}{8}$  in. one way and  $\frac{7}{16}$  in. the other. It is slightly damaged on one side, but even in its imperfect state is a handsome specimen. Its length is  $2\frac{1}{4}$  inches and its depth  $1\frac{5}{8}$  inches. Brant county, Mr. E. C. Waters.

Too late to have engraved, we received from Mr. Archibald Riddell, manager Bronson Lumber Co., the largest and one of the most perfect slate specimens in the collection. In form it may be very properly described as semi-lunar, when viewed sidewise. Across the slightly concave edge it measures nearly nine inches, its width is four and a half inches, and the arc formed by its convex edge measures thirteen and a half inches. The concave edge, or back, is half an inch thick in the middle and tapers to one-eighth at each end. The back is considerably thicker than what may be called the blade, and it has been formed by the material of the latter portion having been worked down until its greatest thickness is not more than three-eighths of an inch, thus forming a bar on each side of the back, as if left to give it strength.

The methods employed in the cutting-down process may be traced, and from this point of view alone the specimen is a very instructive one. These may be referred to in a future report.

In outline it strongly resembles the blade of an ancient European battle-axe, and the grooves that have been made at the base of the bars when the blade was in process of formation, lend color to the idea that the object was attached to a handle and used as a weapon of war. But several reasons may be adduced to show why it was not so employed. First, there is the difficulty of attachment to a handle owing to the want of notches at the end of the grooves—next there is the evidence already referred to, that the grooves themselves are merely incident to the cutting-down process—then there is the improbability of such a form being used for this purpose, and, chiefly, there is the objection that the material is too fragile to prove very effective in the infliction of more than a few blows.

Its use was probably a more noble one, viz., that of preparing skins of animals for clothing. It is well known that currying processes of various kinds were well understood by savage man—indeed, such knowledge was indispensable to his very existence, and it seems tolerably certain that this tool was employed for the purpose of fitting hides or pelts for domestic or personal use.

As an implement for procuring clay to make pottery, or as a spade or hoe for simple agricultural purposes, it could have been employed also with good effect. In this case, however, it would have been scratched in the direction of the thrust, whereas the thin convex edge is worn perfectly smooth.

However employed, the specimen is an exceedingly interesting one, and places the Institute under another debt of obligation to Mr. Riddell, who procured it from an Indian at the mouth of the York River, where it joins the Madawaska. The Indian found it some distance below the surface when he was digging a potato-pit.

### FINGER RING.

Finger-rings are rare among relics of the Red Man. The only other one I know of is in the public school museum at Elora. The specimen figured here



FIG. 57. (Full Size).

is from Simcoe county, and formed part of the collection of Capt. J. G. Spain. A series of shallow cuts or notches round the edge of the hole were probably intended for ornament rather than as a record or tally. Norfolk county.

### RUBBING TOOLS.

The stone represented in this cut (fig. 58) has been employed in all probability for the reducing of bone awls or needles to shape. It is a flat gritty, limestone pebble, well adapted for such a purpose, and the scratches made are still

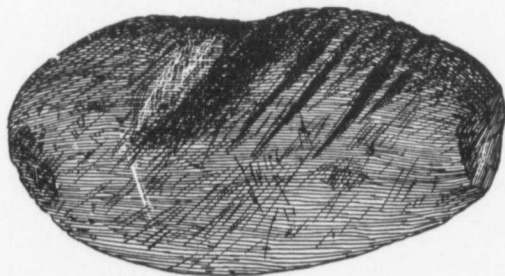


FIG. 58. (Half Size).

visible on the sides of the ruts that have been deeply worn during the course of rubbing. The angle at which the grooves run indicates that the stone was held in the left hand, while the action was performed with the right. Capt. J. G. Spain.

All that can be said regarding fig. 59 is that the original has evidently been employed as an effective tool, but in what way it is not easy to guess. The oblique notch seen at one end has its counterpart on the other side (see cross

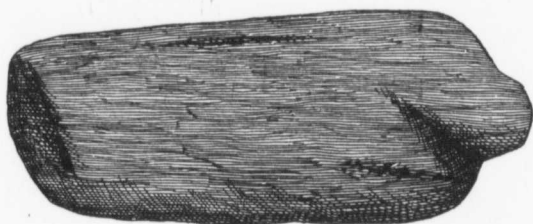


FIG. 59.) Half Size).



FIG. 60.

section, fig. 60), and both appear to have been produced by rubbing on some hard substance. The body of this tool is smooth, fairly symmetrical, and is admirably fitted for the hand. Capt. J. G. Spain, Norfolk county.

#### BONE AND HORN.

Combs are not among the common finds on village sites, in graves, or elsewhere, perhaps for a similar reason to that suggested in connection with fig. 74 (horn chisel). This one (fig. 61) was found in one of the graves at Baptiste Lake. The side shown in the cut has been worked down to a smooth surface. Some rubbing has also been done on the opposite side, but not much. The upper end shows all the roughness of the original cutting. In the grave with this specimen was found a quantity of red hematite, no doubt used as war paint



FIG. 61. (Full Size).

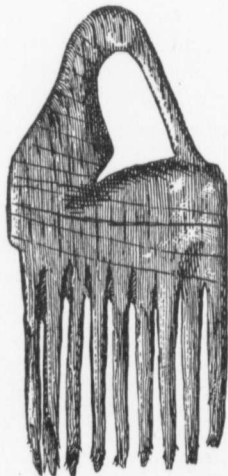


FIG. 62. (Nearly Full Size).

Another comb of bone is represented at fig. 62. It is chiefly remarkable in having the upper part or back carved to imitate the form of a bird—probably a woodpecker, with an elongated bill. I found this interesting specimen along with a variety of others elsewhere referred to, in the grave of a child at Baptiste Lak



The long bone specimen illustrated here (fig. 63) measures eleven and a quarter inches. It represents one of two, similarly marked, from Baptiste Lake, Hastings

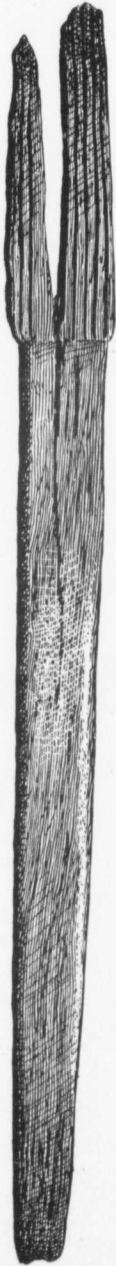


FIG. 63. ( $\frac{2}{3}$  Size.)



FIG. 64. ( $\frac{1}{2}$  Size.)



FIG. 65. ( $\frac{2}{3}$  Size.)

county, and found in the burial ground there by Mr. Archibald Riddell. The grooves at both ends are perhaps too long to have been intended for marking pottery. At the larger end they are three inches in length, and at the smaller

end an inch and a half. This specimen appears to be formed from a rib-bone, the convex side of which is seen in the engraving.

Fig. 64 is also made from a rib, and is, at one end, grooved like Figure 63. It is much more curved than figure 63. The ridges, eight in number, appear rounded as the result of wear.

Figure 65 resembles nothing that has hitherto found its way into our possession, nor is it like anything I have ever seen figured elsewhere. Indeed, the same may be said regarding figures 63 and 64. At one end it has been toothed like a comb. As but a small portion of the teeth remain it is impossible to say with certainty how long these were originally, but perhaps they did not exceed in length those shown in the following figure. The opposite end still has the angle it possessed as a tool, and enough remains to show that two deep grooves ran from heel to point on its narrow face, thus forming three sharp ridges fully an inch and a half long. Though somewhat weathered it was probably never more than a quarter of an inch in thickness at this, its thickest end.

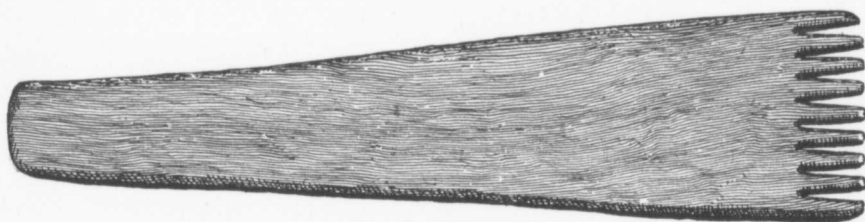


FIG. 66. ( $\frac{1}{2}$  Size.)

The toothed specimen here figured is thinner than even the one last described—its thickest part, one-third of its length from the end of the teeth, is only three-sixteenths of an inch. At first sight this might be taken for a comb, but an examination of the teeth shows that the ends have been worn wholly on one side. This specimen is six and one-eighth inches long. It was found in one of the Baptiste Lake graves.



FIG. 67. ( $\frac{2}{3}$  Size.)

This exceedingly odd-looking specimen (fig. 67), forms part of the collection from Brant county. The horn of which it formed a part was palmated.

Measuring seven and a half inches in length at present it does not appear that much has been broken off the fractured end, as the edge shows traces of cutting. As is the case with a few other specimens of deer-horn similarly bored, the hole is worn at an angle, suggesting the use of the tool for purpose of an arrow-straightener. See Can. Inst. Report, 1890-91, p. 56. But the condition of the longer prong in figure 67 is suggestive of usage in some other way, for it has been hollowed fully five-eighths of an inch deep, and the lips are whittled down outwardly in such a manner as to leave a tolerably sharp edge forming the margin of the hollow. It may have been, as suggested by Mr. Waters, that this portion of the tool was used as a sort of vice, pincers, or grip, in which small objects were wedged to be held while being chipped or otherwise manipulated. Mr. E. C. Waters.

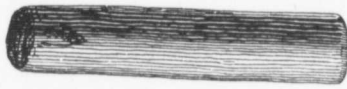


FIG. 68. (Full Size.)

Simple in form as are specimens like figures 68 and 69, there is nothing known with certainty as to their use. They have been called tobacco stoppers. An old gentleman in Brant county assured me he had seen the Indians use them to fasten down skins to the ground for dressing purposes. It has been thought



FIG. 69. (Full Size.)

they were employed as pins or as buttons for fastening articles of clothing about the person. Figures 68 and 69 show about the maximum and minimum lengths of these objects. Those here figured were found in Brant county by Mr. E. C. Waters.

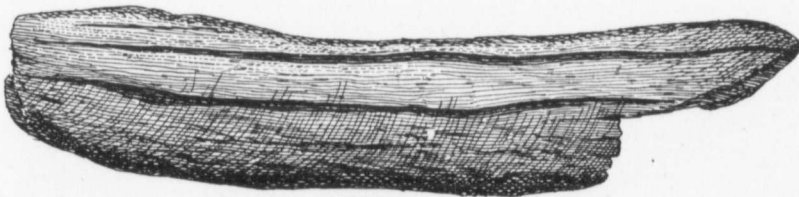


FIG. 70. ( $\frac{1}{4}$  Size.)

Figure 70 represents a portion of an antler on the outer surface of which two deep longitudinal cuts have been made as if with the intention of cutting off strips. The cutting seems to have been performed with some short tool, probably a flint flake. The marks produced by the action of the cutter are still to be seen on the sides of cuts. E. C. Waters, Brant county.

The object here figured was no doubt used as a pipe and is the only one of horn in the museum. The bowl is a little over an inch deep. The stem-hole shows that it has been drilled with a rough-edged instrument, no doubt, flint. The



FIG. 71. (Full Size.)



FIG. 72. ( $\frac{3}{4}$  Size.)



FIG. 73.

lower end is rounded, and the work has been performed with a not over-sharp knife of some sort. An attempt has also been made to round off the outside of the edge forming the lip of the bowl. E. C. Waters, Brant county.

On the prominent end of figure 72 is a series of seven ridges and six grooves. The bottom of each groove is angular, and still retains the marks made by the rude tool that did the cutting, while the faces of the ridges are smooth and round, as if the result of wear. What strikes one as the most likely use for such a tool is the marking of pottery. Having tested it on a piece of clay (see fig. 73), satisfactory results were produced—perhaps the results were too satisfactory, for the pattern I formed possessed a regularity that seldom characterizes the line-markings on Indian pottery, and this without any attempt on my part to be at all exact. Besides this, I found that the pressure required to make the lines deep enough would be likely to throw the vessel out of shape, unless, indeed, we suppose that one hand supported the material inside, while with the other the pattern was produced outside. It is, at any rate, certain that the tool *could* have been used in this way, but that it *was* so used it would be rash to assert. E. C. Waters, Brant county.

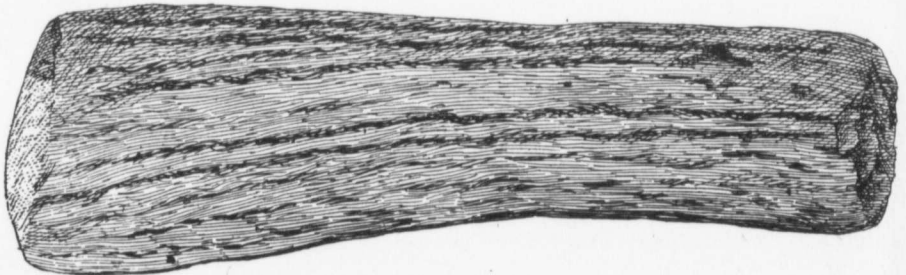


FIG. 74. ( $\frac{3}{4}$  Size.)

Implements like the horn specimen figured here are not found very frequently, perhaps rather on account of their liability to decay than because there

were not many in use. This one is nine and one-fourth inches long, and two and three-fourths across its widest part. For cutting purposes it never could have been of much account, but as a tool for the removal of bark from trees, or as a spade, or a hoe, it was capable of doing fairly good work. The edges bear the tool-marks of him who shaped the implement, but for fully half the distance from the sharpened end, these are worn smooth, just as we might expect to find them if the implement had been used as here suggested. E. C. Waters, Brant county.

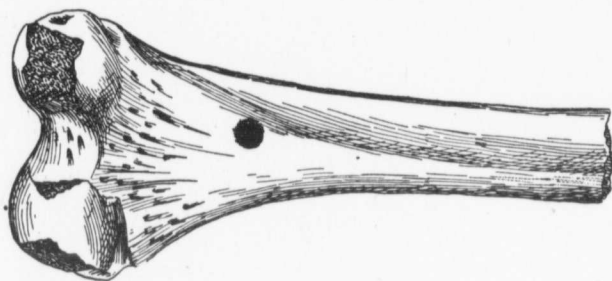


FIG. 75.

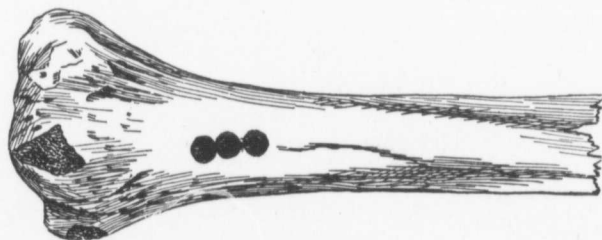


FIG. 76.

In a gravel-pit near the town of Simcoe were found the lower thirds of two human femurs, and the whole of a tibia, each of which is bored as seen in the illustrations. The other fragmentary femur is not shown, because it corresponds in every particular with the one represented here, except that it is a little shorter. In the tibia (only part of which is engraved) it will be observed that three holes are bored side by side, and in line. Unfortunately, since the find was made, a mouse has made free with this specimen and has nibbled away the portions that separated the holes. Along with these there were an eyed bone needle of the usual type and a foreign shell (a species of *Natica* also bored), the two being attached by a strand of hair.

Mr. W. P. Byrch, of this city, suggests that these bones were probably so treated, in connection with a belief that stuffing the holes with poisonous substances would induce bodily pains in persons against whom the operator had a grudge. The presence of the bone needle, the shell and the hair, gives colour to the belief that witchery or enchantment had something to do with the boring of the holes in the bones, and with the burial of the bones themselves. Mr. Byrch states that the Indians of Cape Croker still entertain a belief of the kind mentioned.



## SHELL.

Fig. 77 seems to be an ornament of some kind made from the columella of a sub-tropical shell. It may have been a tool of some kind, the use of which is not apparent, unless the point at one end and the smooth rounded edge at

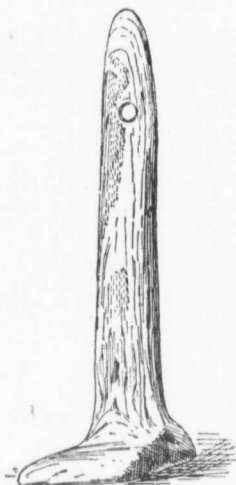


FIG. 77. ( $\frac{1}{8}$  Size.)

the other are suggestive of application in marking patterns on pottery. It is not likely, however, that material so scarce, and therefore so precious, would be employed in any such way. Mr. E. C. Waters, Brant county.

## WOOD.



FIG. 78. ( $\frac{1}{8}$  Size.)

Fig. 78 is from the child's grave already mentioned. It appears to be the upper portion of a hair-comb, the teeth of which are decayed. In all likelihood it was used for fastening, or adorning, rather than for dressing the hair. The material is wood, and the workmanship would indicate the use of tools other than stone.

## IRON TOMAHAWK.



FIG. 79.

thickness of solid iron by friction with flint gives one a glimpse of the patience and tenacity of purpose that characterised the savage Indian. Both of the specimens in our cases are from Brant county, and were found by Mr. E. C. Waters.

## COPPER.

A number of sheet-copper arrow-tips like those shown in the accompanying cuts were found by Mr. Robins in some of the graves in Herschell township. These arrow-heads are rudely and carelessly cut from portions of European copper kettles. They must have been quite useless for shooting, and seem to have been made simply as substitutes for flints for burial purposes. The large number of European articles found in some of the graves renders it tolerably clear that although those who made the graves retained the old custom of depositing objects of various kinds with the bodies, they had lost the art of making chipped arrow points. Here we seem to have an overlapping of the old and the new order of things, as in many other places where specimens of White manufacture are buried in accordance with the traditional customs of the Indians. In this case arrows were probably regarded as a necessity, and the ghosts of these thin copper specimens were thought sufficient for spiritual uses.

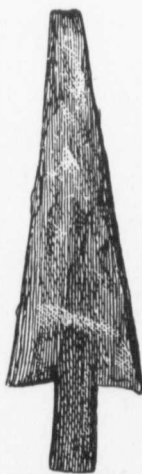
FIG. 80.  
(Full Size.)

FIG. 81. (Full Size.)

thought sufficient

## BRITISH COLUMBIA SPECIMENS.

To the kindness of Mr. W. H. Jones, of Vancouver City, British Columbia, we owe the specimens figured in the three following cuts.

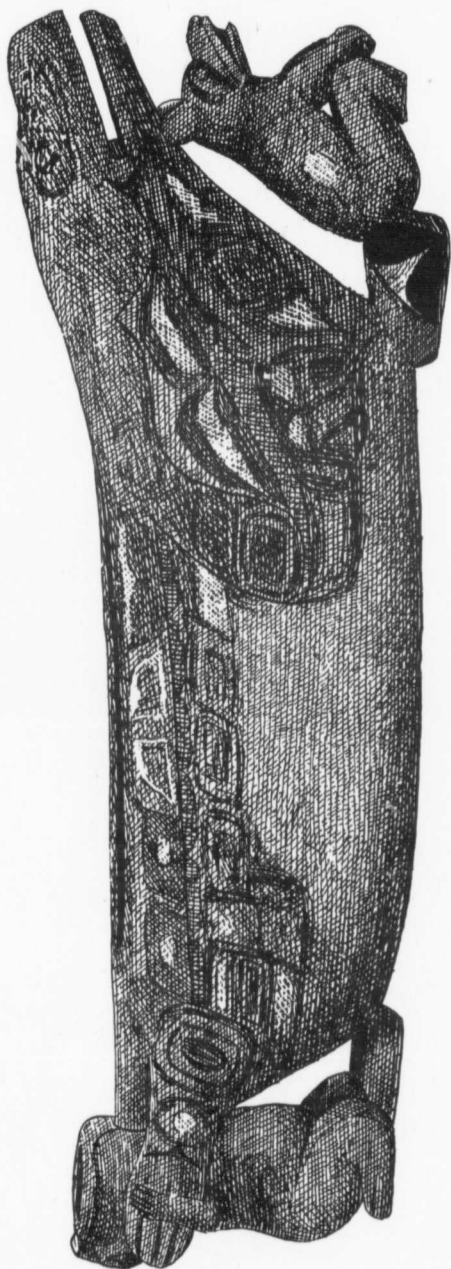


FIG. 82.

Figure 82 was brought to Vancouver by a sea-captain, last spring, from Newitti Head, at the extreme north of Vancouver Island. This would hardly be noteworthy, in consideration of the large number of specimens the natives now manufacture for sale, were it not that this article bears every evidence of belonging to a date anterior to the demand for mere curiosities.

The Hydahs are remarkable for their carving proclivities, both in wood and stone. Their totem-posts are of world-wide fame, and specimens of their artistic handiwork in objects made from black slate may be seen in almost every museum. This specimen appears to show that the Flatheads of Newitti are scarcely inferior to the Hydahs.

Notwithstanding the large amount of work that has been expended on figure 82, it was, in all probability, intended only for a household chest—perhaps for holding food, and corresponding to what is known in Scotland as a "girnell." It is made of pine, is five feet four inches long, and has been hollowed to the capacity of about two bushels. The main figure represents a seal—the head supporter is said to represent a rabbit or hare, and the figure upholding the tail is a human caricature, the head of which is thrown far back, and the enormously disproportionate mouth forms a deep cup, capable of holding fully a pint.

The characteristic design has been painted in red, white and black, now much worn, and not quite as clear as shown in the illustration.

Figure 83 gives a good idea of a coffin found by Mr. Jones on a small island about fifty miles north of Burrard Inlet. When discovered it was covered with stones and contained two human skulls (see figs. 127 and 128) and some other bones.

Mechanically, this box illustrates the ingenious devices practiced by the

Hydahs in forming right angled, wooden receptables. The cedar, which is a split board, fairly well smoothed, has been half-checked and bent to form three of the corners; the fourth one, where the ends meet, being fastened with wooden pins driven in as nails. The boards that form the top and bottom are much thicker than the other, and they have been roughly slotted to receive the sides,



FIG. 83.

the square shoulder on the outside of the slot adding very much to the power against pressure from within, while the inner and sloping side of the slot, fitting tightly against the edge stiffens it against pressure from without.

The bottom is tied to the sides at each corner by means of some spruce root fibre. There was no fastening to the top.

Two sides and one end are painted with devices on the grain of the wood. It is a little over two feet long, and eighteen inches wide.

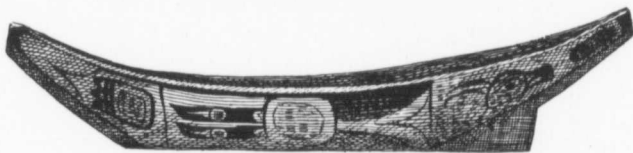


FIG. 84.

Figure 84 represents a model canoe from the same island as figure 82. It is two feet, five inches long.

Since the foregoing was written, I have received the following letter from Mr. Jones. The particulars he gives relative to the coffin and carved seal vessel will be read with much interest.

"Vancouver, British Columbia,  
Nov. 30, 1891.

"The Indian coffin I sent was found on a small Island not more than 40x60 feet, situated in Pendar Harbor, a small land-locked bay about 50 miles north of



Burrard Inlet. The island consists of rock and shingle with scarcely more than two inches of mould upon it at any place. The centre of it was covered by scrubby cedar and grass. The coffins were all near the highest part of the mound, among some cedar brush, but whether that had been brought there by the natives when they deposited the remains of their relatives and friends upon this sequestered little island, I cannot say. The boxes were, as nearly as possible, of the same size and all had been covered at one time with split cedar boards, almost similiar to the sides of the coffin, held in place by boulders weighing from 25 to 75 pounds. In some of the boxes we found two skeletons but in most only one. Decomposition had so far advanced that we could not ascertain whether the remains of the deceased had been cut limb from limb in order to get them into such narrow quarters, nor could we determine whether the two corpses whose skeletons we found in the one coffin, had been put there about the same time, or one after the other had decomposed. Only two of the score of coffins that there may have been on the island, were remarkable; that I have sent was the only one on which there was any painting. It was found near the centre of this group of strange looking graves, and the stones upon the lid were heavier than on the others, and there were more of them. Another coffin had been placed upon a small, clumsily hewn-out canoe, about 8 feet long and scarcely large enough to accommodate one man.

“From what I could learn by inquiry and judging from the state of the preservation of the wood in these coffins, it is probable they had been on that sland for upwards of fifty years and perhaps a hundred. Some of the Indians of the British Columbia coast place the remains of their deceased friends in caskets very much like these and suspend them among the branches of trees, and on one or two occasions trouble has been threatened from fires made by settlers to clear the land having spread to the wood and burned the trees in which these bodies were. The figures on the coffin are common to all the tribes of the northern Pacific coast, and are supposed to be a representation of the all-seeing eye. The coffin sent is a very fair sample, I think, of the kind of casket used for the dead by the Flat-head Indians or Siwashes of British Columbia, who inhabit the coast from the north of Vancouver Island to Puget Sound, though I think the idea of painting it, and especially the design came from their intercourse with the Haidah Indians whose home is the Queen Charlotte Islands.

“The figure of the seal carved in wood, and supported by smaller figures at each end, was probably used as a tureen in the cabin of a chief of the Newitti Indians. It was brought from Newitti Head at the extreme north of Vancouver's Island in Nov. 1890 by Capt. Jas. W. Anderson, who was there on a halibut fishing expedition in the steamer *Velos* of Vancouver. The Indians of Newitti belong to the Flatheads, but having travelled somewhat more than their brethren of the south, and especially having come so frequently in contact with the Haidahs, of Queen Charlotte Islands have adopted many of the arts of the latter, who are among the most advanced in civilization of any of the aboriginal tribes of America, and have learned the arts of carving in wood and painting. Some who have visited these places are doubtful whether they do any of the carving with which their cabins are so profusely supplied, themselves, but prefer to think that they have bought it all from the Haidahs. The cabins of the Newittis are usually quadranglar in shape, made of split cedar, around the inside is a platform of these cedar boards, about four feet wide, inside this is the level ground floor of the cabin, with a hole about two feet in depth, hollowed out in the centre, in which the fire for the household is built and the cooking done. The entrance to the cabin is often through a movable door cut out of the trunk of a huge cedar, which may be 20 to 30 feet in height and carved to the top in numerous grotesque figures, the whole being known as totem-poles. Many of their utensils for



household use are of wood, carved in various ways but in nearly all these carvings the figures of the raven, the bear, the wolf or the big fish are seen, but frequently, however, the design consists of a union of two or more of these forms. In all of the representations of these animals, the eye is made large and prominent, their recognition of the presence of the all-seeing eye of the Great Spirit.(?)

"Yours truly,

"W. H. JONES."

Now on the way from British Columbia are the following specimens procured from Mr. Rowland E. Green :—

- 3 Slate totem poles.
- 1 Copper shield.
- 1 Pair silver bracelets.
- Abilone shells.
- 8 Horn spoons.
- 1 Spruce fibre hat.
- 1 Water basket.
- 1 Medicine man's (Shaman's) horn.

Regarding these, Mr. Green sends the following interesting notes :—

"The slate totem poles are from Skidegate Inlet, Queen Charlotte's Island the only place where such soft slate is found. The smallest of the three is priced by the H. B. Co., at Fort Simpson at \$7, and the other two, more in proportion, according to size, up to as high as \$20. The Indians employ their time during the winter months in making these and bracelets such as the pair I send. The latter are much smaller than the usual run of bracelets, each one is made from a twenty-five cent piece, they sell at \$3 to \$4 per pair. The copper shield or coat of arms came from Clew between Moresby and Provost Island in Genushewa Inlet. It is beaten out of native copper found on Skedauz Island. They are valued by tribes other than the Hydahs, at an enormous price. At Alert Bay in the Indian graveyard is a board over the grave of a chief which contains a tally of the number of blankets his copper was valued at. I counted up to seventy-five, but as after that it was confused I could not make out the exact number. Seventy-five blankets each of which costs at least \$2.50 makes the value \$187.50. A trader up north has a copper not any better than yours for which an Indian offered him \$50 gold coin and the offer was scorned. I, myself, in days gone by was asked by a chief to lend him \$20 to make up a sum he had to pay for a copper. If I remember right the amount was \$300.

"The abilone shells I procured at Clew, Q. C. I., to show what the mother-of-pearl which you see inlaid in the horn spoons, was composed of. The fossils I picked up on th beach at the same place. The horn spoons eight in number, are made from the horns of the mountain goat and the cow, and are carved according to the particular tradition which it represents. You will notice that both in these and the totems the predominating faces or figures are man, bear, wolf, fish, frog and raven, and sometimes you meet with a mixture between two of them, half fish and half bear or half man. I saw an Indian carving a bracelet on which was the representation of a bear's body with a fish's tail. I asked why he put such a thing on the bracelet, and he answered that long ago their ancestors had seen such in those waters. They can imitate any pattern you like to give them and can work in any metal that is malleable. You will often see bracelets with a perfect representation of the American eagle as it appears on the half dollars and dollars.

"I suppose you wish to know the use of the spoons; they are used at all meals but not generally such valuable ones as these which fetch \$3 readily in Victoria and over the Sound. They have others of the same shape, but plain and made of wood only. A lady who was at a marriage feast of a chief and chieftainess told me that one of the ceremonies was the bridegroom marched with his friends carrying big presents of biscuit, sugar, molasses, dried fruits, fish (dried), and oolachan grease with berries. (This grease is the most horribly stinking stuff to a white man that you can imagine.) After they had feasted, the chief toasted his bride in a spoon big enough to hold a pint, full of this oolachan grease, he emptied himself another and then filled it and handed it to her and she was compelled to do likewise, as it is considered a bad omen to spill or waste a drop. That bride is a widow, and at present the head chief of Fort Simpson, Soodall by name.

"The hat and basket are both made of the fibres of the root of the spruce tree which are boiled, and then beaten till they become disintegrated strings, of which the hat and basket are composed; if soaked in water the fibres swell and become waterproof enough to carry water in them. They are practically indestructible from fair wear and tear. The medicine man's horn is made of wood and bound together with the same material of which the hats are made. This and several other instruments, such as drums, fifes, and tom-toms are used by the native doctors in their incantations over the sick, to drive away the devil, and if the devil is anything like a human being he must indeed get scared, for the hubbub and noise are something awful. This practice is however very seldom used of late, as the Hydahs with a few exceptions have embraced Christianity, and to all appearances are, for new converts, pretty strict in their adherence to their religious vows.

"Of numbers of villages which composed one of the most powerful and numerous of the nations on the north-west coast there remain now but three villages, Massett, Skidegate and Clew. The first numbers between 200 and 250 persons, the second, about 100 all told, and the last not more than 84 or 85. To add to their misfortunes, on arriving on the mainland in March last to work in the canneries, hardly a soul of them but was prostrated with la grippe. Massett lost a few old hands, but Skidegate and Clew lost terribly. The latter especially, lost out of 98 counted last fall during six weeks previous to my visit there, eleven, and one was dying whilst I took the census. Many others were sick at the time but most of them bid fair to pull through. In conclusion I wish to say that these Hydahs of Queen Charlotte Islands and those of Prince of Wales Island in American territory who speak the same language, appear to be a different race altogether from the rest of the coast tribes. They are more proud and haughty, and consider it a degradation to do what they know to be wrong; they also make a proud boast that *they never killed a white man*. No other tribe on the coast can say so.

"I must close by hoping you will be pleased with my description, and if so, at some future date I will give you a resumé of what I have ascertained in regard to the coast Indians of British Columbia generally.

"I am, Sir,

"Yours very respectfully,

"ROWLAND E. GREEN."

## CRANIA.

For two or three years it has been my intention to embody in one of these reports the results of measurements, made on the skulls, in the museum. One deterrent reason was a fear that the quantity of material was not large enough, for, in the words of a distinguished anthropologist, "The first thing which is requisite for craniometrical study, is a sufficient number of specimens. \* \* \* \* The archæologist, therefore, should collect the most likely specimens he can find, and not take *any* he may lay hold of, and bring them to the laboratory with the question, Are these the skulls of so and so? \* \* \* \* Twenty skulls of the same sex, are sufficient in general to remove all questions of difficulty; but this number is necessary." Want of material, however, no longer constitutes a reason why such work should not be done, and I have been fortunate in securing for this purpose the professional services of those who were able to execute it much more satisfactorily than I could ever hope to perform it myself.

Where special attention is given to cranial examinations, many mechanical devices are employed for the purpose of obtaining exact results, and it may be in order to explain here that the only apparatus used for the following measurements consisted of tape-line and callipers. This not only rendered the labor exceedingly tedious, but, notwithstanding the great care exercised, failed probably to secure such absolute nicety as could be wished for in measurements of this kind.

None but those who have attempted such work, can realise the number of difficulties that present themselves in securing accuracy. "Bernard de Palissy maintained that the human skull is the most irregular formed figure in nature, and gave expression to a sentiment in which all must agree who are commencing craniometrical researches. 'I have a desire,' he says, 'to measure the head, in order directly to know its dimensions, and it appears, to me, that the sauterelle, the rule and the compasses would be very proper instruments to employ for that purpose, but the fact is I can never be sure of my measurements.\*'"

For the purpose of emphasising the character of the following results, it may be pardonable to state, that both of my assistants are graduates of Trinity University, Toronto, that one is now a practising physician in the city of Hamilton, and the other is demonstrator of anatomy in the Toronto Women's Medical College. I am glad to take this opportunity of thanking them both for the time and attention they have gratuitously bestowed on the work.

## CRANIAL MEASUREMENTS.

DEAR SIR:—In accordance with your request, and with the assistance of Dr. Letitia K. Meade, I have measured and examined certain of the Indian skulls in the Institute's collection, and herewith present the results of the work done.

The measurements have been made as carefully and accurately as limited time and scant apparatus would permit. On one or other of these grounds also, some calculations are wholly omitted.

At first we examined and gauged upwards of one hundred skulls, according to the rules laid down by Michele Centonze, but the accompanying results are mainly in agreement with the methods of Professor Paul Broca, and Dr. Paul Topinard of Paris. Some assistance too, was procured from references made to Morton's *Crania Americana*.

\* Paul Topinard, "Anthropology" p. 223. London, Chapman and Hall, 1890.

As it is recommended by anthropologists that observers, for the guidance of readers, should always state the points of measurement, those we employed are herewith given.

#### *Diameters.*

Maximum antero-posterior diameter, from glabella to the farthest point of the skull behind.

Maximum transverse, from the two lateral points on the skull most distant from each other, avoiding the mastoid portion of the temporal.

Vertical, basilo-bregmatic, from the basion to the bregma.

Transverse frontal, minimum or inferior, at the narrowest part of frontal bone just above the superciliary ridges.

Transverse frontal, maximum, from stephanion to stephanion.

Transverse occipital, from one asterion to the other.

#### *Curves.*

Median frontal sub-cerebral, from the nasal to the supra-orbital point.

Median frontal cerebral, from supra-orbital point to bregma.

Median parietal, from bregma to lambda.

Median occipital supra-iniac, from lambda to inion.

Median occipital cerebellar, from inion to opisthion.

Transverse supra-auricular, from a point situated above the auditory foramen on the longitudinal root of the zygomatic process, through the bregma to the analogous point on the opposite side.

Horizontal, circumference from supra-orbital point across temporal ridge of frontal bone at the points from which the minimum frontal measurements were taken to maximum occipital point and thence round opposite side of skull to starting point. The horizontal anterior circumference extends on each side to the line of the curve of the transverse supra-auricular circumference the posterior horizontal circumference from this to maximum occipital point.

#### *Face.*

Length from ophryon to alveolar point.

Width, bizygomatic.

Length, skeleton of nose, from naso-frontal suture to nasal spine.

Width, skeleton of nose, greatest width of anterior orifice of nose.

In describing the inion M. Broca's method has been adopted and numbers from 0 to 5 have been made of use to indicate the size of this process, 0 corresponding to its complete obliteration, 5 to its maximum development. The pterion is marked H or K according as it resembles either of those letters.

The part of the face to which the plane of the artificially lengthened occipital foramen comes is marked in the notes, A, E, I, O, U:—A corresponding to the alveolar point, E to the nasal spine, I to the position of the inferior turbinated bone, O to the point at which the inferior border of the orbit reaches the median line, and U to the median point situated at the top of the os-unguis. This method is also that, employed by M. Broca.

Those measurements marked (app) have been taken in skulls whose measuring points were broken so that only approximate results could be obtained.

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The average cephalic index of the 35 skulls in which the requisite measurements could be obtained, was 74.6 thus placing them among the dolichocephalic crania of Broca's classification, or among the orthocephalic skulls according to Prof. Huxley's nomenclature.

The average vertical index amounted to 73.5, and the frontal and stephanic to 67.6 and 88.4 respectively.

In calculating these averages the artificially deformed skulls A, B, C, and D from British Columbia and Arkansas were not taken into account.

Yours respectfully,

SUSANNA P. BOYLE, M.D., C.M.

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## KEY TO MEASUREMENTS.

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### DIAMETERS.

1. Antero-posterior diameter.
2. Transverse " "
3. Vertical " basion to bregma.
4. Transverse frontal, minimum.
5. " " maximum.
6. " occipital "

### CURVES.

7. Median frontal, sub-cerebral.
8. " " cerebral.
9. " parietal.
10. " occipital, supra-iniac.
11. " " cerebellar.
12. Transverse, supra-auricular.
13. Horizontal, anterior.
14. " posterior.
15. " total.

### FACE.

16. Length.
17. Width.
18. Length, skeleton of nose.
19. Width "

### INDICES.

20. Cephalic.
  21. Frontal.
  22. Stephanic.
  23. Vertical.
-

## MEASUREMENTS—CRANIOMETRY.



Fig. 84. No. 3.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		<i>Craniometry.</i>
		Millimetres.
Age, 60 .....	1	170
Sex, female .....	2	139
Sutures, not distinct, serrations, simple. ....	3	132.5
Inion, 3 .....	4	80.8
Pterion, H .....	5	107
Part of face artificially lengthened, occipital..	6	105
foramen comes to. E. ....	7	15
Lateral parietes, protuberant. ....	8	105
Glabella, absent .....	9	115
Superciliary arches, slight .....	10	70
Form of forehead, somewhat retreating. ....	11	43
Frontal emirences, small .....	12	310
Vault, roof-shaped .....	13	230
Probola, medium .....	14	270
Sub-iniac curve, level with condyles .....	15	500
Hollow at root of nose, deep. ....	16	76
Inferior border nares, heart shaped .....	17	128
Mastoid process, small .....	18	43
	19	20.6
	20	81.7
	21	58.1
	22	75.4
	23	77.9

See page 60 for Key to Measurements.

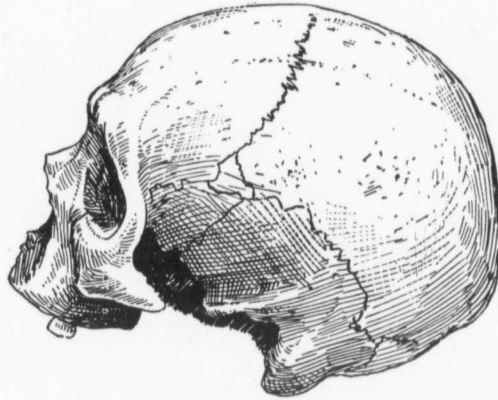


Fig. 85. No. 4

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 40 .....	1	202
Sex, male .....	2	146
Sutures, serrations simple, intermaxillary slightly marked .....	3	136
Wormian bones, two present, in lambdoid and masto-occipital sutures .....	4	97
Wormian bones, two present, in lambdoid and masto-occipital sutures .....	5	110
Wormian bones, two present, in lambdoid and masto-occipital sutures .....	6	110
Inion, O .....	7	20
Pterion, H .....	8	110
Artificially lengthened occipital foramen comes to E. ....	9	122
Artificially lengthened occipital foramen comes to E. ....	10	48
Lateral parietes, bulging .....	11	70
Glabella, prominent.....	12	289
Superciliary arches, prominent .....	13	235
Frontal eminences, absent .....	14	280
Forehead, receding .....	15	515
Vault culminates at bregma .....	16	90
Conformation of vault, roof-shaped .....	17	132
Probola, projecting and rounded .....	18	53
Sub-iniac curve, flattened .....	19	30
Mastoid process, large, tubercular .....	20	72.2
Hollow at root of nose, shallow .....	21	66.4
Inferior border of nares, shallow curves.....	22	88.1
Muscular attachments all well marked.....	23	67.3

See page 60 for Key to Measurements.



Fig. 86. No. 5.

*Cranioscopy.**Craniometry.*

		Millimetres.
Face gone.	1	196
Age, 60 . . . . .	2	149
Sex, male . . . . .	3	140
Sutures, deep and complex serrations, sagittal	4	93
bulging from bregma to $\frac{3}{4}$ in. of obelion..	5	110
Inion, 5, rough . . . . .	6	112
Pterion, H . . . . .	7	20
Artificially lengthened occip. foramen comes to	8	116
E. . . . .	9	118
Glabella, prominent . . . . .	10	75
Superciliary arches, prominent . . . . .	11	52
Frontal eminences, absent . . . . .	12	295
Forehead, retreating . . . . .	13	245
Vault culminates, 5.2 centimetres behind	14	285
bregma . . . . .	15	530
Mastoid process, large, rough . . . . .	16	
	17	
	18	
	19	
	20	76.02
	21	62.4
	22	84.5
	23	71.4

See page 60 for Key to Measurements.



Fig. 87. No. 6.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		<i>Craniometry.</i>
		Millimetres.
Face and base of skull gone.	1	175
Age, 50.....	2	155 (app.)
Sex, female.....	3	
Sutures, serrations simple, except lambdoid....	4	101
Pterion, H.....	5	111
Inion, O.....	6	110
Artificially lengthened, occipital foramen....	7	21
Lateral parietes, protuberant.....	8	110
Glabella, absent.....	9	109
Superciliary ridges, small.....	10	77
Frontal eminences, small.....	11	imperfect.
Forehead, straight.....	12	"
Median line, slightly elevated from glabella to	13	"
a point between parietal eminences.....	14	"
Probola, medium in size. Rounded.....	15	"
	16	"
	17	"
	18	"
	19	"
	20	88.5
	21	65.1
	22	90.9
	23	"

See page 60 for Key to Measurements.



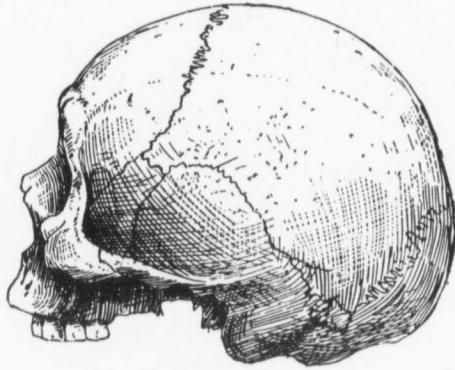


Fig. 88. No. 7.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 45.....	1	186
Sex, male.....	2	143
Sutures, simple, sagittal depressed between parietal eminences and lambda. Depression in left lambdoid suture.....	3	134
	4	97
	5	110
Wormian bones, small one in masto-occipital suture.....	6	110
	7	19
Inion, 2.....	8	103
Pterion, H.....	9	115
Artificially lengthened occipital foramen comes to I.....	10	83
	11	29
Lateral parietes, markedly bulging.....	12	297
Glabella, medium.....	13	232
Superciliary ridges, medium.....	14	267
Frontal eminences, rudimentary.....	15	499
Forehead, receding.....	16	91
Vault culminates at bregma.....	17	140
Probola, small, smoothly rounded.....	18	47
Sub-iniac curve, extends below condyles.....	19	27
Mastoid process, small, rough.....	20	76.8
Hollow at root of nose, shallow.....	21	67.8
Inferior border of nares, heart-shaped.....	22	88.1
	23	72.0

See page 60 for Key to Measurements.

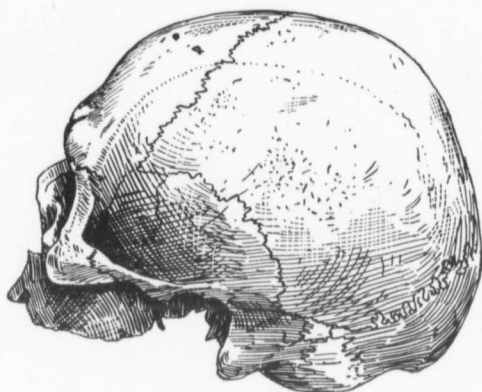


Fig. 89. No. 8.

*Cranioscopy.**Craniometry.*

		Millimetres.
One zygoma broken.	1	180
Age, 50.....	2	138
Sex, male.....	3	136.5
Sutures, simple serrations.....	4	96
Pterion, H.....	5	114
Inion, O.....	6	114
Artificially lengthened occip. foramen comes to I	7	13
Lateral parietes, moderately full.....	8	170
Glabella, small.....	9	125
Superciliary ridges, well developed.....	10	82
Frontal eminences, moderate in size.....	11	30
Forehead, straight.....	12	300
Median line, prominent to a point midway be-	13	240
tween inion and vertex where there is a		
depression.....	14	265
	15	505
Vault, somewhat keel-shaped.....	16	80.4 (app.)
Probola, very prominent, globular.....	17	130 (app.)
Sub-iniac curve, level with condyles.....	18	53
Mastoid process, medium.....	19	20.9
Hollow at root of nose, shallow.....	20	76.6
Inferior border nares, tends to the horizontal..	21	69.5
Infra-orbital foramina, large. Left measures	22	84.2
6.5 mm. transversely.....	23	75.8

See page 60 for Key to Measurements.



Fig. 90. No. 9.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 65.....	1	184
Sex, male.....	2	149
Sutures, serrations very complicated.....	3	140
Pterion, H, but on left side bridge very narrow	4	100
Artificially lengthened occipital foramen comes to E.....	5	108
Inion, 4.....	6	114
Lateral parietes, bulging.....	7	16
Glabella, very prominent.....	8	112
Superciliary ridges, very prominent.....	9	135
Frontal eminences, small.....	10	55
Forehead, retreating.....	11	62
Median line. presents at 2 centimetres above lambda a rounded eminence about 2 cen- timetres in diameter.....	12	300
	13	240
	14	286
	15	526
Probola, not prominent.....	16	83
Sub-iniac curve, level with condyles.....	17	147
Mastoid process, very long, thick and rough, one is 30.8 millimetres in length.....	18	54
	19	27
Malar bones, very thick, with muscular attach- ments strongly marked.....	20	80.9
	21	67.1
Hollow at root of nose, shallow.....	22	92.6
Inferior border nares, heart shaped.....	23	76.0
Inferior border orbit, much thickened.....		
Muscular attachments, very strongly marked on all parts of the skull. Posterior root of zygoma is raised behind into a prominent ridge with sharply marked hollow behind it. Similar markings are present on each side in lambdoid suture about 2 centim. above asterion, groove looking backward and inward. On superior curved line is another sharp depression looking upward with a ridge below it.....		

No. 9.—Continued.

*Cranioscopy.*

Teeth, none present. Alveolar borders smooth.  
 Temporal line, reaches to within 4.4 centimetres  
 of median line at bregma. Temporal fossæ  
 thus very large.....  
 All foramina are surrounded by a rounded  
 ring of thickened bone....

*Craniometry.*

Millimetres.



Fig. 91. No. 10.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 70.....	1	199
Sex, male.....	2	130
Sutures, simple. In some places obliterated....	3	134
Inion, 0.....	4	91*
Pterion, H.....	5	85*
Artificially lengthened occipital foramen comes to I.....	6	106
	7	8
Lateral parietes, flattened, perpendicular.....	8	112
Temporal ridge, from metopic point to this line 45 mm., bregma to stephanion, 47 mm....	9	130
	10	45
Glabella, prominent.....	11	67
Superciliary ridges, prominent and rough....	12	278
Frontal eminences, slight.....	13	239
Forehead, retreating.....	14	270
Probola, bulging.....	15	507
Sub-iniac curve, flattened.....	16	71
Mastoid processes, thick, rough, medium length	17	Both zygomas gone.
Median line, raised from glabella to obelion..	18	53
Vault, keel-shaped.....	19	28
Hollow at root of nose, deep.....	20	65,3
Inferior border of nares, shallow.....	21	70
	22	107
	23	67.3

\*In this case the high curve of the temporal lines makes the so-called maximum frontal diameter appear less than the minimum.

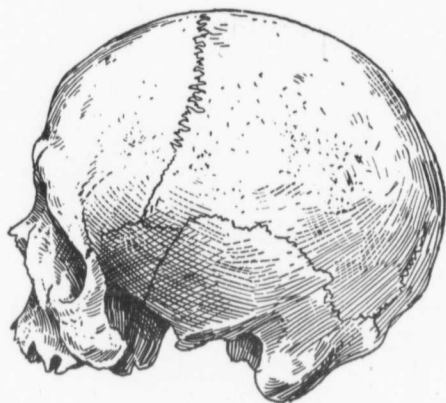


Fig. 92. No. 11.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 35-40 .....	1	180
Sex, female .....	2	140
Sutures, serrations small but not complex.....	3	140
Pterion, H .....	4	99
Inion, 0 .....	5	112
Artificially lengthened occipital foramen E..	6	111
Glabella, absent .....	7	14
Superciliary arches, small .....	8	110
Frontal eminences, slightly marked .....	9	124
Forehead, straight .....	10	71
Median line, elevated in parietal region.....	11	39
Probola, globular, bulging .....	12	297
Sub-iniac curve, level with condyles .....	13	235
Mastoid process, large and very deeply grooved	14	272
posteriorly .....	15	507
Hollow at root of nose, scarcely any present..	16	67 app.
Inferior border nares, grooves shallow .....	17	137
	18	49
	19	30
	20	77.7
	21	70.7
	22	88.3
	23	77.7

See page 60 for Key to Measurements.





Fig. 93. No. 12.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 70-80 .....	1	198
Sex, male .....	2	154
*Sutures, obliterated .....	3	140
Pterion, H. ....	4	111
Artificially lengthened occipital foramen comes to O. ....	5	120
Wormian bones, one small, at posterior inferior angle of parietal .....	6	118
Wormian bones, one small, at posterior inferior angle of parietal .....	7	12
Lateral parietes, bulging .....	8	125
Lateral parietes, bulging .....	9	135
Temporal line, crosses parietal eminences. ....	10	85
Glabella, medium .....	11	46
Superciliary arches, medium .....	12	312
Frontal eminences, prominent, united .....	13	252
Forehead, straight .....	14	307
Vault culminates 2.5 centimetres behind bregma	15	559
Proboscis, prominent, globular .....	16	78
Inion, 2. ....	17	145
Mastoid processes, thick, short, rough .....	18	54
Hollow at root of nose, moderate .....	19	29
Inferior border nares, shallow .....	20	77.7
Septum nasi, divergent .....	21	72.0
	22	92.5
	23	70.7

\* In cut the sutures are too sharply defined.



Fig. 94. No. 13.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		<i>Craniometry.</i>
		Millimetres.
Face gone.	1	195
Age, 66-70 .....	2	135
Sex, male .....	3	142
Sutures, almost obliterated .....	4	96
Pterion, H .....	5	107
Inion, 1 .....	6	114
Lateral parietes, flattened .....	7	15
Glabella, prominent .....	8	112
Superciliary arches, prominent .....	9	135
Forehead, retreating .....	10	62
Frontal eminences, absent .....	11	58
Vault, sugar-loaf .....	12	298
Mastoid process, thick, broad, rough .....	13	250
Probola, prominent .....	14	277
	15	527
	16	
	17	
	18	
	19	
	20	69.2
	21	71.1
	22	89.7
	23	72.8

See page 60 for Key to Measurements.



Fig. 95. No. 14.

*Cranioscopy.**Craniometry.*

		Millimetres.
Almost all face gone.	1	193
Age, 60 .....	2	144
Sex, male .....	3	134
Sutures, sagittal and coronal almost obliterated.	4	94
Pterion, H .....	5	105
Inion, 4 .....	6	105
Artificially lengthened occipital foramen comes to E .....	7	15
	8	115
Lateral parietes, bulging .....	9	120
Glabella, prominent .....	10	69
Superciliary ridges, very pronounced .....	11	50
Frontal eminences, absent .....	12	295
Forehead, receding .....	13	245
Proboscis, bulging .....	14	275
Sub-iniac curve, extends below condyles .....	15	510
Mastoid process, short, thick, rough .....	16	
Malar bones, thick, wide, projecting .....	17	
Wormian bones one in lambdoid suture, close to lambda .....	18	
	19	
	20	74.6
	21	65.2
	22	89.5
	23	69.4

See page 60 for Key to Measurements.



Fig. 96. No. 15.

*Cranioscopy.**Craniometry.*

		Millimetres.
One zygoma broken.	1	178
Age, 25-30 .....	2	125
Sex, female .....	3	138.5
Sutures, simple in arrangement.....	4	82
Pterion, H .....	5	100
Inion, 0.....	6	105
Artificially lengthened occipital foramen comes to A .....	7	12
.....	8	105
Lateral parietes, flattened .....	9	120
Glabella, absent .....	10	58
Superciliary ridges, slightly marked.....	11	60
Frontal eminences, slightly marked.....	12	270
Forehead, receding .....	13	216
Probola, very prominent, globular.....	14	270
Sub-iniac curve, level with condyles .....	15	486
Mastoid process, large, rough.....	16	84
Malar bones, slender .....	17	117 (app.)
Inferior border of nares, almost semi-circular in shape .....	18	54
.....	19	22
.....	20	70.2
.....	21	65.6
.....	22	82
.....	23	77.8

See page 60 for Key to Measurements.



Fig. 97. No. 16.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 30-40 .....	1	180
Sex, female .....	2	127
Sutures, serrations small and very intricate ..	3	126.5
Pterion, H .....	4	82
Inion, 2 .....	5	93
Artificially lengthened occipital foramen, I....	6	104
Lateral parietes, moderately protuberant .....	7	15
Glabella, absent .....	8	109
Superciliary ridges, absent .....	9	124
Frontal eminences, slightly marked .....	10	64
Forehead, straight .....	11	50
Probola, very globular .....	12	271
Sub-iniac curve, on level with condyles .....	13	223
Mastoid process, small, slender .....	14	275
Hollow at root of nose, absent; root of nose	15	498
broad .....	16	75
Inferior border of nares, shallow grooves .....	17	124 (app.)
Arch of palate, very high .....	18	51
	19	23
	20	70.5
	21	64.5
	22	88.1
	23	70.2

See page 60 for Key to Measurements.



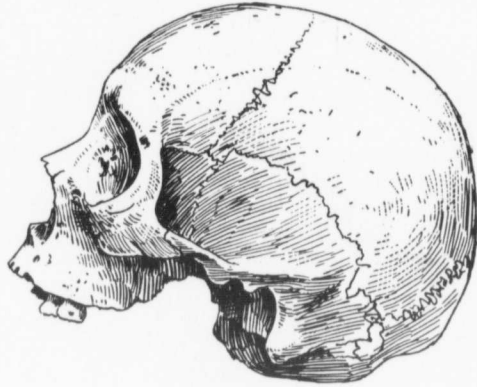


Fig. 98. No. 17.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		<i>Craniometry.</i>
		Millimetres.
Age, 50 .....	1	173
Sex, female .....	2	134
Sutures, serrations, simple .....	3	139
Pterion, H .....	4	89
Inion, 1. ....	5	104
Artificially lengthened occipital foramen, mid-way between A and E .....	6	103
Lateral parietes, moderately protuberant. ....	7	11
Glabella, absent .....	8	109
Superciliary ridges, slightly developed. ....	9	110
Frontal eminences, absent .....	10	57
Forehead, straight .....	11	55
Probola, globular .....	12	279
Sub-iniac curve, on level with the condyles. ....	13	222
Mastoid processes, small, slender .....	14	270
Hollow at root of nose, medium .....	15	492
Inferior border of nares, sharply curved grooves; right lower than left .....	16	72
Wormian bones, small one in posterior inferior angle of left parietal bone. ....	17	130
	18	52
	19	25
	20	77.4
	21	66.4
	22	85.5
	23	80.3

See page 60 for Key to Measurements.

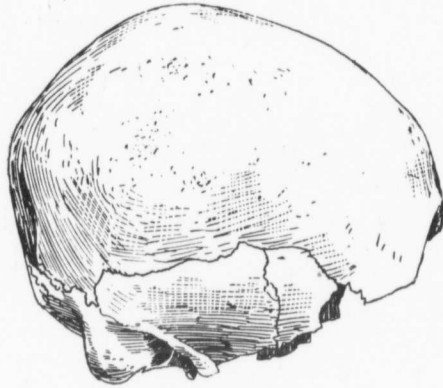


Fig. 99. No. 18.

*Cranioscopy.**Craniometry.*

		Millimetres.
Face entirely gone, with glabella and superciliary arches.	1	
Age, 70 . . . . .	2	155
Sex, male . . . . .	3	147
Sutures, almost indistinguishable, except lower part of lambdoid and squamous . . . . .	4	95
	5	103
	6	105.5
Pterion, H. . . . .	7	
Inion, 1, flattened triangular in centre, somewhat elevated at the sides . . . . .	8	
	9	
Lateral parietes, very protuberant from parietal eminences downwards . . . . .	10	
	11	Obliterated and broken.
Frontal eminences, very small . . . . .	12	310
Forehead, rounded . . . . .	13	248
Probola, slightly protuberant . . . . .	14	275
Sub-iniac curve, extends below condyles . . . . .	15	523
Mastoid processes, short, but broad . . . . .	16	
Occipital bone, superior curved line strongly marked. On each side of external occipital crest is a small foramen. At outer extremity of inferior curved line on left side . . . . .	17	
	18	
	19	
	20	
	21	61.2
	22	92.2
	23	

See page 60 for Key to Measurements.

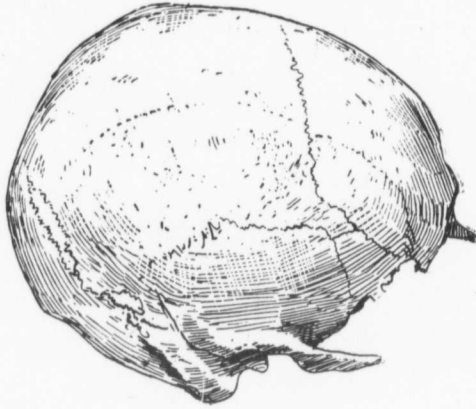


Fig. 100. No. 19.

*Cranioscopy.**Craniometry.*

		Millimetres.
Face gone.	1	200
Age, 70 .....	2	141
Sex, male .....	3	141
Sutures, serrations fine but not deep .....	4	101
Pterion, H .....	5	105.5
Inion, 3 .....	6	116
Lateral parietes, moderately full .....	7	11
Glabella, small .....	8	115
Superciliary ridges, medium .....	9	137
Forehead, retreating .....	10	77
Frontal eminences, indistinct .....	11	45
Vault, keel-shaped .....	12	300
Median line, vertex $4\frac{1}{2}$ centimetres behind bregma .....	13	235
Probola, globular, prominent .....	14	298
Sub-iniac curve, extends below condyles .....	15	533
Mastoid processes, short, wide .....	16	
Wormian bone, one in temporo-occipital suture.	17	
	18	
	19	
	20	70.5
	21	71.6
	22	95.7
	23	70.5

See page 60 for Key to Measurements.



Fig. 101. No. 20.

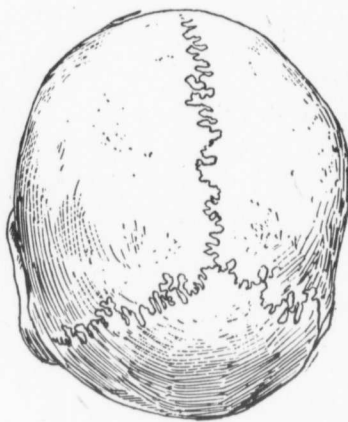


Fig. 102. No. 20.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 50 .....	1	190
Sex, male .....	2	140
Sutures, deeply serrated .....	3	140
Pterion, H, bridge narrow .....	4	95
Inion, 4, rough .....	5	111
Artificially lengthened occipital foramen, I. ....	6	110
Glabella, medium .....	7	15
Superciliary ridges, medium .....	8	111
Frontal eminences, absent .....	9	132
Forehead, retreating .....	10	76
Lateral parietes, slightly bulging .....	11	48
Probola, globular .....	12	295
Sub-iniac curve, extends below condyles .....	13	230
Mastoid process, small but very massive at root.	14	289
Hollow at root of nose, deep .....	15	519
Inferior border of nares, curves wide, shallow ..	16	72.5
Wormian bones, three present; two in right	17	136
side of lambdoid, and one in occipito-	18	49
mastoid suture of left side. In front of	19	28
each occipital condyle on basilar process is	20	73.6
a distinct tubercle .....	21	67.8
	22	85.5
	23	73.6

See page 60 for Key to Measurements.

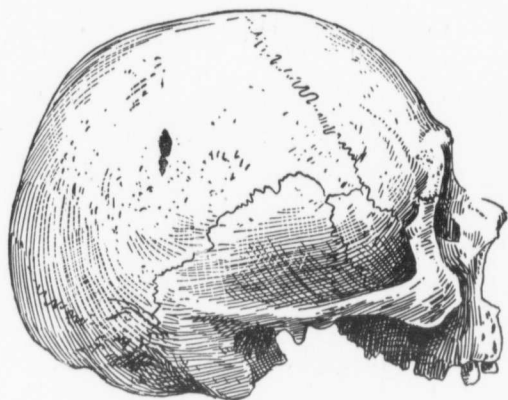


Fig. 103. No. 21.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 66-70 .....	1	192.5
Sex, male .....	2	141
Sutures, almost obliterated, excepting the lambdoid .....	3	140
.....	4	97
Pterion, H .....	5	107
Inion, 2 .....	6	111
Artificially lengthened occipital foramen, I. ....	7	13
Lateral parietes, vertical, flattened .....	8	111
Glabella, small .....	9	130
Superciliary ridges, medium .....	10	74
Frontal eminences, indistinct .....	11	51
Forehead, straight .....	12	304
Median line, elevated at sagittal suture .....	13	230
Probola, prominent .....	14	302
Sub-iniac curve, on level with condyles .....	15	532
Hollow at root of nose, medium .....	16	84
Inferior border of nares, the sides asymmetrical .....	17	137
owing to marked deviation of septum nasi .....	18	60
to the left .....	19	27.5
.....	20	73.2
.....	21	68.7
.....	22	90.6
.....	23	72.7

See page 60 for Key to Measurements



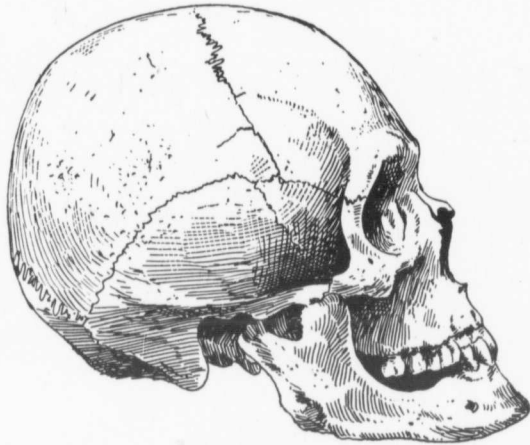


Fig. 104. No. 22.

*Cranioscopy.**Craniometry.*

		Millimetres.
One side of skull gone.	1	
Age, 30.....	2	
Sex, female.....	3	135
Sutures, serrations deep and intricate.....	4	99
Pterion, H.....	5	106
Artificially lengthened occipital foramen, l.....	6	
Lateral parietes, protuberant.....	7	13
Glabella, small.....	8	110
Superciliary ridges, small.....	9	112
Frontal eminences, absent.....	10	
Forehead, straight.....	11	
Mastoid processes, small.....	12	290 (app.)
Hollow at root of nose, medium.....	13	
Inferior border of nares, heart-shaped.....	14	
	15	
	16	82
	17	124
	18	51
	19	27
	20	
	21	
	22	93.4
	23	

See page 60 for Key to Measurements.

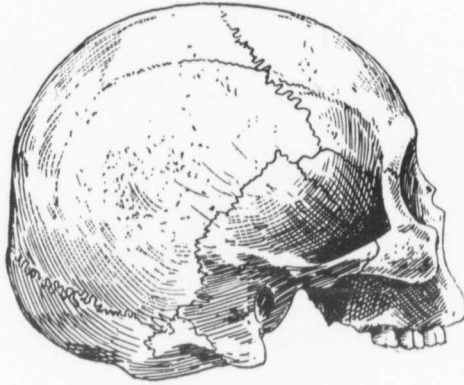


Fig. 135. No. 23.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		<i>Craniometry.</i>	Millimetres.
Left zygoma broken.	1		176
Age, 20-25 .....	2		135
Sex, female .....	3		133
Sutures, serrations deep but simple .....	4		87
Pterion, almost K shaped .....	5		104
Inion, 0 .....	6		105
Artificially lengthened occipital foramen, I . . .	7		12
Lateral parietes, protuberant, especially below	8		110
parietal eminences .....	9		127
Glabella, small .....	10		62
Superciliary ridges, absent .....	11		56
Frontal eminences, indistinct .....	12		285
Forehead, straight .....	13		205
Vault, smoothly curved .....	14		287
Probola, very prominent, globular .....	15		402
Sub-iniac curve, on level with condyles.....	16		79
Mastoid process, small .....	17		122
Hollow at root of nose, none; root of nose wide	18		50
and flat.....	19		26
Inferior border of nares, widely curved .....	20		76.7
Wormian bones, one small in each occipito-mas-	21		64.4
toid suture .....	22		83.6
	23		75.5

See page 60 for Key to Measurements.

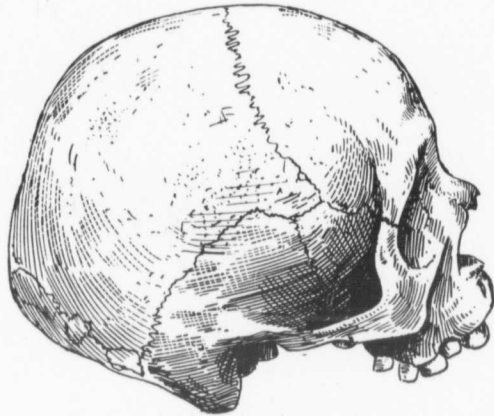


Fig. 106. No. 24.

*Cranioscopy.**Craniometry.*

		Millimetres.
Very thick-walled and heavy.	1	190
Age, 30.....	2	142
Sex, female.....	3	138.5
Sutures, serrations very intricate and deep....	4	102
Pterion, H.....	5	105
Inion, O.....	6	110
Artificially lengthened occipital foramen, E....	7	15
Lateral parietes, protuberant.....	8	128
Glabella, small.....	9	135
Superciliary ridges, small.....	10	75
Frontal eminences, fairly well marked.....	11	44
Forehead, straight.....	12	302
Median line, elevated as far as lambda.....	13	241
Probola, very prominent, globular.....	14	286
Sub-iniac curve, level with condyles.....	15	527
Mastoid process, short, thick.....	16	81
Hollow at root of nose, medium.....	17	140
Inferior border of nares, narrow curves.....	18	52
Wormian bones, os épactal.....	19	24
	20	74.7
	21	71.8
	22	97.1
	23	72.8

See page 60 for Key to Measurements.



Fig. 107. No. 25.

*Cranioscopy.**Craniometry.*

<i>Cranioscopy.</i>		Millimetres.
Very small.	1	156
Age, 20.....	2	127
Sex, female.....	3	127.5
Sutures, serrations intricate.....	4	85
Pterion, H.....	5	100
Inion, O.....	6	99
Artificially lengthened occipital foramen, E.....	7	15
Lateral parietes, slightly protuberant, especially at parietal eminences.....	8	96
	9	104
Glabella, small.....	10	57
Superciliary arches, moderate.....	11	46
Frontal eminences, absent.....	12	270
Forehead, somewhat retreating.....	13	209
Probola, slightly protuberant.....	14	235
Sub-iniac curve, on level with the condyles.....	15	444
Mastoid process, small.....	16	76
Hollow at root of nose, shallow.....	17	122
Inferior border of nares, shallow curves.....	18	44
	19	25
	20	81.4
	21	66.9
	22	85
	23	81.7

See page 60 for Key to Measurements.

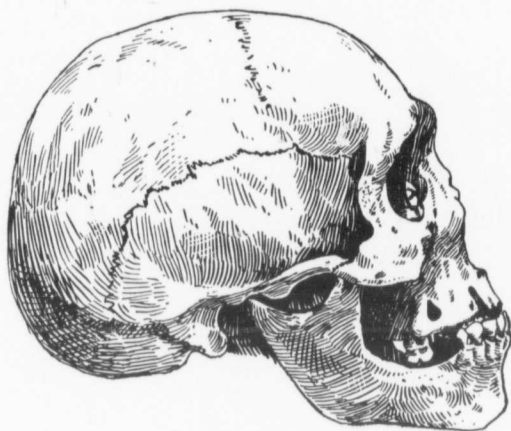


Fig. 108. No. 26.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 60.....	1	195
Sex, male.....	2	133
Sutures, serrations small, obliterated in many places.....	3	133.5
Pterion, H.....	4	94
Inion, O.....	5	96
Artificially lengthened occipital foramen, I....	6	110
Lateral parietes, protuberant.....	7	13
Glabella, large.....	8	118
Superciliary ridges, well developed.....	9	129
Frontal eminences, small.....	10	76
Forehead, retreating.....	11	45
Mastoid process, broken on both sides.....	12	305
Median line, elevated in parietal region.....	13	255
Probola, medium, globular.....	14	275
Sub-iniac curve, does not extend below condyles.....	15	530
Hollow at root of nose, very shallow.....	16	92
Inferior border nares, heart shaped.....	17	144
Wormian bones, a large one 4.2 centimetres long at lambda, two small elongated in left side lambdoid suture, and another small in right lambdoid suture.....	18	54
	19	26
	20	68.2
	21	70.6
	22	97.9
	23	68.4

See page 60 for Key to Measurements.



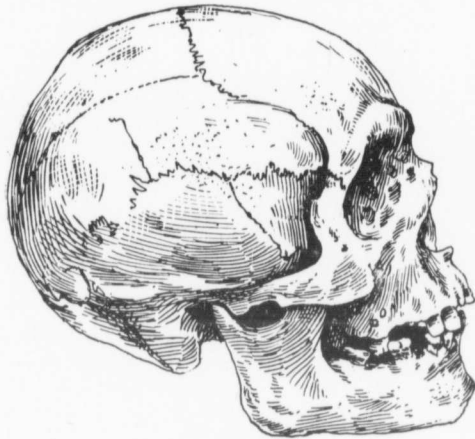


Fig. 109. No. 27.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 70.....	1	194.5
Sex, male.....	2	133
Sutures, serrations deep, simple.....	3	138
Pterion, H.....	4	102
Inion, 3, rough, triangular, with a point projecting downward.....	5	107
Artificially lengthened occipital foramen, E.....	6	109
Lateral parietes, flat, vertical.....	7	8
Glabella, very prominent.....	8	120
Superciliary ridges, very prominent.....	9	118
Frontal eminences, absent.....	10	78
Forehead, retreating.....	11	41
Forehead, retreating.....	12	292
Median line, elevated from coronal suture to a point midway between the parietal foramina, also in middle line of frontal bone there is a longitudinal median eminence present.....	13	235
.....	14	280
.....	15	515*
.....	16	89
.....	17	150
Sub-iniac curve, does not extend to level of condyles.....	18	56
.....	19	27
Mastoid process, long and strong.....	20	68.3
Hollow at root of nose, shallow.....	21	76.6
Inferior border of nares, curves small, shallow.....	22	95.3
Styloid processes, very long.....	23	70.9

\* The superciliary ridges in this skull are exceptionally high, so much so that the total horizontal circumference measured over them is 535 millimetres, or a difference of 20 millimetres in excess of the sum of the anterior and posterior measurements, the anterior being taken *above* them.



Fig. 110. No. 28.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 25.....	1	182.5
Sex, female.....	2	134
Sutures, serrations simple.....	3	140
Pterion, H.....	4	91.5
Inion, depressed instead of elevated, and internally presents no elevation corresponding to external depression.....	5	98
Artificially lengthened occipital foramen, E....	6	110
Lateral parietes, moderately full.....	7	10
Glabella, small.....	8	111
Superciliary ridges, medium.....	9	125
Frontal eminences, indistinct.....	10	80
Forehead, straight.....	11	42
Median line, raised from bregma to point situated between parietal foramina.....	12	293
Probola, slightly curved.....	13	218
Sub-iniac curve, extends below condyles.....	14	287
Mastoid process, short, thick.....	15	505
Hollow at root of nose, medium.....	16	78
Inferior border of nares, narrow, sharply curved grooves.....	17	134
Wormian bones, two present, one in parieto-mastoid suture, and another at lower end of lambdoid suture on right side; both small.	18	52
	19	27
	20	73.4
	21	68.2
	22	93.3
	23	76.7

See page 60 for Key to Measurements.



Fig. 111. No. 29.

*Cranioscopy.**Craniometry.*

		Millimetres.
Face entirely gone.	1	174
Age, 50 .....	2	138
Sex, female .....	3	128
Sutures, serrations simple .....	4	85
Pterion, 4.....	5	94.5
Inion, 2 flattened.....	6	111
Lateral parietes, protuberant.....	7	20
Median line, depressed between parietal eminences .....	8	100
	9	108
Glabella, small.....	10	67
Superciliary ridges, small .....	11	52
Frontal eminences, indistinct.....	12	283
Forehead, somewhat retreating.....	13	222
Mastoid process, small, thick.....	14	281
Probola, flattened .....	15	303
Sub-iniac curve, on level with condyles .....	16	
Wormian bones, a small one at each end of lambdoid suture .....	17	
	18	
	19	
	20	79.3
	21	61.5
	22	89.9
	23	73.5

See page 60 for Key to Measurements.

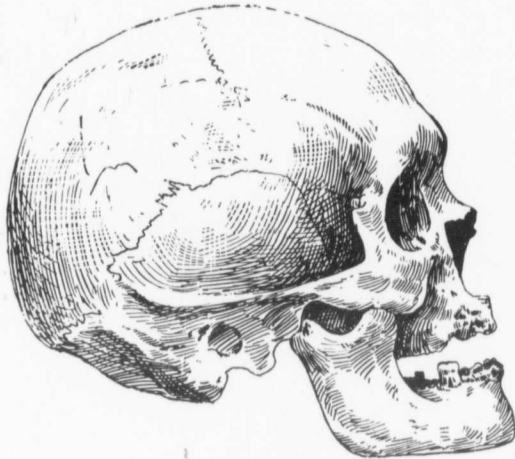


Fig. 112. No. 42.

*Cranioscopy.**Craniometry.*

		Millimetres.
Left zygoma gone.	1	194
Age, 60.....	2	144
Sex, male.....	3	152
Sutures, very simple serrations.....	4	94
Pterion, H. ....	5	117
Artificially lengthened occipital foramen, below	6	111
A.....	7	14
Inion, 4.....	8	120
Lateral parietes, moderately full.....	9	132
Glabella, very prominent.....	10	58
Superciliary ridges, very prominent.....	11	50
Frontal eminences, slightly marked, united....	12	318
Forehead, straight.....	13	238
Probola, slightly protuberant.....	14	294
Sub-iniac curve, slight.....	15	532
Mastoid process, thick, rough, of medium length	16	82
Hollow at root of nose, pronounced, deep....	17	148
Inferior border nares, grooves shallow and wide	18	53
Muscular attachments on occiput very strongly	19	27
marked.....	20	74.2
	21	65.2
	22	71.7
	23	78.3

See page 60 for Key to Measurements.

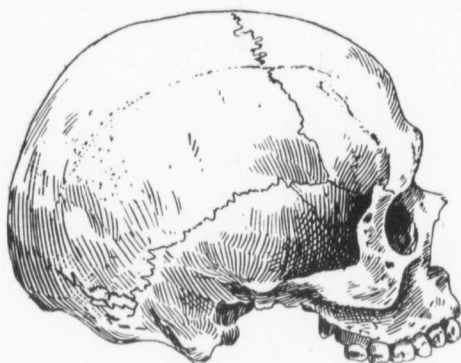


Fig. 113. No. 45.

*Cranioscopy.**Craniometry.*

		Millimetres.
Left zygoma gone.	1	185
Age, 25 .....	2	127.5
Sex, female .....	3	135
Sutures, serrations simple .....	4	93
Pterion, H .....	5	104.5
Inion, O .....	6	106
Artificially lengthened occipital foramen, A ..	7	10
Lateral parietes, flat .....	8	109
Glabella, small .....	9	118
Superciliary ridges, prominent .....	10	Imperfect.
Frontal eminences, small, united .....	11	Imperfect.
Forehead, straight .....	12	285
Probola, medium .....	13	227
Sub-iniac curve, broken .....	14	275
Mastoid process, short, thick .....	15	502
Vault, beautifully curved .....	16	76 (app.)
	17	128 (app.)
	18	48
	19	28.5
	20	68.9
	21	72.9
	22	88.0
	23	72.9

See page 60 for Key to Measurements.





Fig. 114. No. 47.

*Cranioscopy.**Craniometry*

		Millimetres.
Both zygomatic proesses absent.	1	190.5
Age, 65 .....	2	138
Sex, male .....	3	144
Sutures, indistinct .....	4	94
Pterion, H .....	5	104
Inion, 2, rough.....	6	105
Artificially lengthened occipital foramen, A ..	7	10
Lateral parietes, protuberant.....	8	112
Glabella, very prominent .....	9	119
Superciliary ridges, very prominent.....	10	77
Frontal eminences, indistinct .....	11	44
Forehead, markedly retreating.....	12	295
Median line, elevated from glabella to metopic	13	236*
point where it divides and encloses a	14	279
rounded elevated triangular space which	15	515
extends 3 centimetres on each side of	16	78
bregma, sagittal suture raised .....	17	141
Probola, medium.....	18	52
Sub-iniac curve, does not extend below condyles	19	26
Mastoid process, long, rough .....	20	72.4
Hollow at root of nose, deep, nose has been	21	68.0
broken in life, and is somewhat deflected.	22*	90.4
Inferior border of nares, sides ascend rapidly	23	75.5

\*Over superciliary ridges=250 mm.

See page 60 for Key to Measurements.



Fig. 115. No. 48.

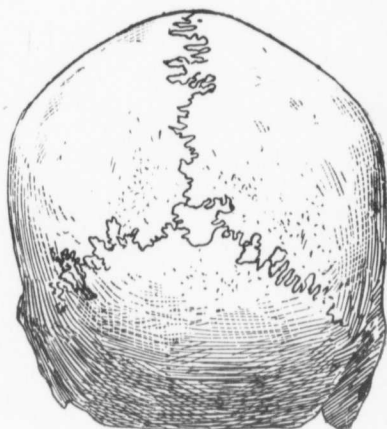


Fig. 116. No. 48.

*Cranioscopy.*

Very heavy.	
Age, 25.....	1
Sex, male.....	2
Sutures, deep, simple.....	3
Pterion, H.....	4
Inion, O.....	5
Artificially lengthened occipital foramen, E..	6
Lateral parietes, full.....	7
Glabella, prominent.....	8
Superciliary ridges, prominent.....	9
Forehead, retreating.....	10
Frontal eminences, indistinct.....	11
Probola, globular.....	12
Sub-iniac curve, on level with condyles.....	13
Mastoid processes, short, thick, rough.....	14
Hollow at root of nose, deep.....	15
Inferior border of nares, shallow curves....	16
Wormian bones, os epactal.....	17
Vault, dome-like.....	18
	19
	20
	21
	22
	23

*Craniometry.*

Millimetres.

1	192
2	144
3	146
4	96
5	110
6	110
7	13
8	112
9	138
10	72
11	49
12	311
13	224
14	304
15	528
16	94
17	138
18	55
19	28
20	75.0
21	66.6
22	87.2
23	76.0

See page 60 for Key to Measurements

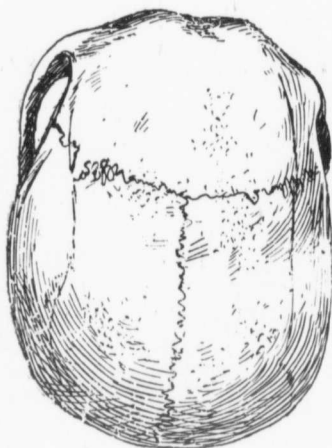


Fig. 117. No. 49.



Fig. 118. No. 49.

*Cranioscopy.**Craniometry.*

		Millimetres.
Very heavy.	1	183
Age, 50.....	2	145
Sex, male.....	3	142
Sutures, simple.....	4	98
Pterion, H.....	5	111
Inion, 1.....	6	112
Artificially lengthened occipital foramen, E..	7	9
Lateral parietes, prominent.....	8	120
Glabella, medium.....	9	119
Superciliary ridges, prominent.....	10	73
Frontal eminences, indistinct.....	11	47
Forehead, straight.....	12	298
Probola, slightly protuberant.....	13	234
Sub-iniac curve, does not extend below condyles.	14	281
Mastoid process, thick, rough, pointed.....	15	515
Hollow at root of nose, shallow.....	16	85
Inferior border nares, broad shallow grooves..	17	146
Wormian bones, 4 present, one large in lamb-	18	56
doid suture to right of lambda, one at	19	26
junction of lambdoid and mastoid sutures,	20	79.2
and two small ones in lambdoid suture of	21	67.5
left side.	22	88.2
	23	77.5

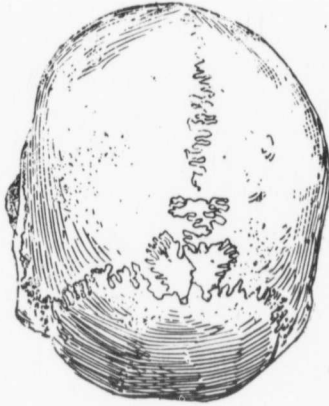


Fig. 119. No. 51.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 40.....	1	192
Sex, male.....	2	136
Sutures, frontal and parietal serrations simple, in lambdoid they are more complicated..	3	142
Pterion, H.....	4	99
Inion, 0.....	5	111
Artificially lengthened occipital foramen, E....	6	110
Lateral parietes, flat.....	7	10
Glabella, small.....	8	120
Superciliary ridges, medium.....	9	137
Frontal eminences, indistinct.....	10	70
Forehead, straight.....	11	46
Median line, culminates 3.75, centimetres behind bregma.....	12	298
	13	240
	14	285
Probola, prominent, rounded.....	15	525
Sub-iniac curve, on level with condyles.....	16	85
Mastoid process, short, thick, rough.....	17	138
Hollow at root of nose, shallow.....	18	58.5
Inferior border nares, widely curved.....	19	27.0
Wormian bones, 3 present, one in sagittal suture and one at centre of lambdoid suture....	20	70.8
	21	72.7
	22	89.1
	23	73.9

See page 60 for Key to Measurements.

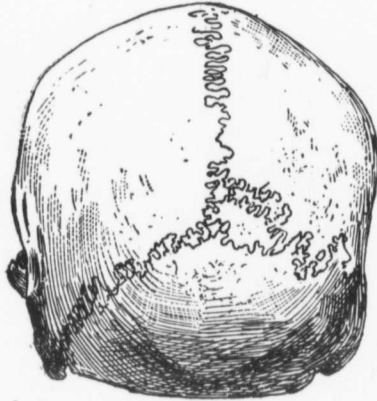


Fig. 120. No. 54.

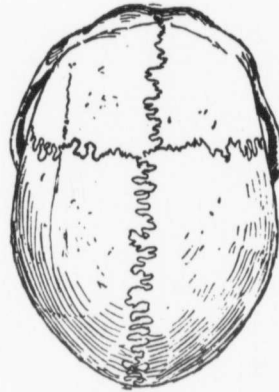


Fig. 121. No. 54.

*Cranioscopy.**Craniometry.*

		Millimetres.
Age, 25.....	1	197
Sex, male.....	2	138
Sutures, frontal suture present, serrations of all	3	132
the sutures complicated, the posterior	4	98
extremity of the frontal suture joins the	5	111
coronal to the right of the junction of the	6	112
sagittal.....	7	11
Pterion, H.....	8	115
Inion, 2.....	9	139
Lateral parietes, moderately full.....	10	73
Artificially lengthened occipital foramen, O..	11	47
Glabella, medium.....	12	298
Superciliary ridges, prominent.....	13	240
Frontal eminences, indistinct.....	14	295
Forehead, straight.....	15	535
Probola, prominent, globular.....	16	76
Sub-iniac curve, extends below condyles.....	17	140
Mastoid process, short, thick.....	18	56
Hollow at root of nose, very shallow.....	19	26
Inferior border nares, grooves shallow.....	20	70
Root of nose, very wide.....	21	70.8
Wormian bones, an os epactal and one also	22	88.3
about middle of lambdoid suture on left side.	23	67.0

See page 60 for Key to Measurements.



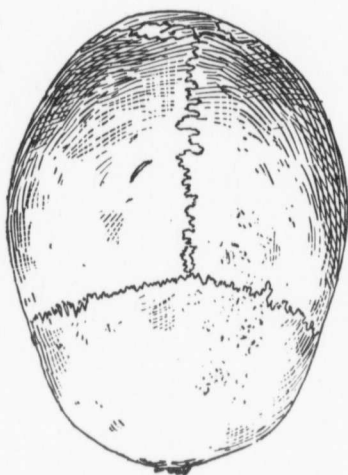


Fig. 122. No. 64.

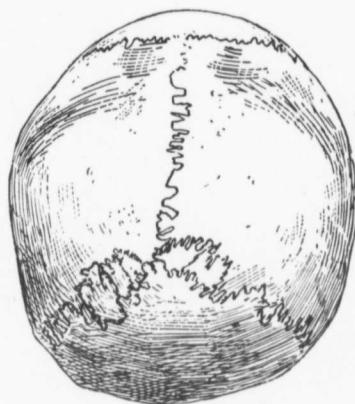


Fig. 123. No. 64.

*Cranioscopy.**Craniometry.*

		Millimtras.
Both zygomatic processes wanting.	1	187
Age, 25.....	2	145
Sex, female.....	3	128
Sutures, serrations small and intricate.....	4	98
Pterion, H.....	5	118
Inion, 2.....	6	120
Artificially lengthened occipital foramen, I....	7	9
Lateral parietes, protuberant.....	8	117
Glabella, small.....	9	113
Superciliary ridges, absent.....	10	89
Frontal eminences, fairly distinct.....	11	29
Forehead, straight.....	12	294
Probola, prominent, globular.....	13	240
Sub-iniac curve, on level with condyles.....	14	285
Hollow at root of nose, absent, root of nose wide and flat.....	15	525
	16	82 (app.)
Wormian bones, 9 present altogether, 5 in upper part of lambdoid sutures, 3 to right of lambda and 2 to left, also a small one in angle between squamous and mastoid sutures, 2 more in lower end of right limb of lambdoid suture and a ninth in occipito-mastoid suture; largest in left lambdoid 27 millimetres long.	17	
	18	52
	19	30
	20	77.5
	21	67.5
	22	83.0
	23	68.4



Fig. 124. No. 67.

*Cranioscopy.**Craniometry.*

		Millimetres.
Face entirely gone.	1	184
Age, 45.....	2	142
Sex, female .....	3	134
Sutures, serrations small and somewhat intricate.	4	96
Pterion, H.....	5	113
Inion, 2.....	6	114
Artificially lengthened occipital foramen.....	7	15
Lateral parietes, protuberant.....	8	116
Glabella, small.....	9	114
Superciliary ridges, small.....	10	71
Frontal eminences, well marked, united.....	11	48
Forehead, straight.....	12	299
Probola, small, but very globular in form....	13	252
Sub-iniac curve, extends below condyles.....	14	270
Mastoid process, slender, short.....	15	522
Wormian bones, 2 on each side of lambda in	16	
lambdoid suture, one on each side being	17	
large and close to parietal; besides these	18	
there are several smaller ones.	19	
	20	77.1
	21	67.6
	22	84.9
	23	72.8

See page 60 for Key to Measurements.

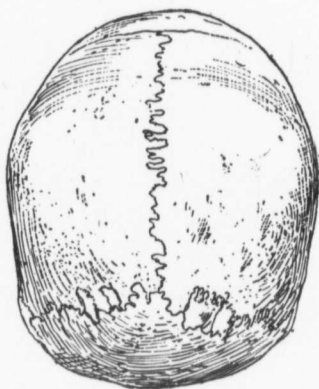


Fig. 125. No. 80.

*Cranioscopy.**Craniometry.*

		Millimetres.
One half (lateral) of face gone.	1	182
Age, 25 .....	2	134
Sex, female .....	3	135
Sutures, extremely simple .....	4	93
Pterion, H. ....	5	108
Inion, 3. ....	6	105
Artificially lengthened occipital foramen E. ....	7	11
Lateral parietes, slightly curved and protuberant .....	8	112
	9	126
Glabella, small .....	10	67
Superciliary ridges, small .....	11	39
Frontal eminences, well-marked .....	12	290
Forehead, straight .....	13	232
Probola, globular .....	14	270
Sub-iniac curve, extends below condyles .....	15	502
Mastoid process, small, slender .....	16	
Hollow at root of nose, absent .....	17	
Wormian bones, four present, in lambdoid suture, two to left and two to right of lambda. The two to the right are large and united by a suture, those to left are smaller and separate from one another .....	18	
	19	
	20	73.
	21	69.4
	22	86.1
	23	74.1

See page 60 for Key to Measurements.

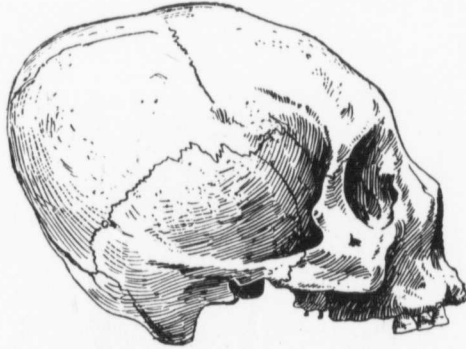


Fig. 126. A. (Brit. Columbia.)

*Cranioscopy.**Craniometry.*

		Millimetres.
Artificially deformed.	1	161
Age, 50 .....	2	150
Sex, female .....	3	114.5
Sutures, coronal and sagittal almost obliterated, lambdoid, simple .....	4	92
Pterion H .....	5	109
Inion, I .....	6	110
Lateral parietes, very protuberant .....	7	15
Artificially lengthened occipital foramen, O .....	8	104
Glabella, very slight .....	9	110
Superciliary ridges, very slight .....	10	60
Frontal eminences, right small, left almost indistinguishable .....	11	39
Forehead, markedly retreating .....	12	288
Median line, depression between frontal eminences, then an elevation about two centim. wide, and extending three or four centim. laterally immediately in front of bregma, behind this another depression. Between parietal eminences is a most marked depression extending from opposite parietal eminences to lambda .....	13	230
	14	265
	15	495
	16	87
	17	137
	18	56
	19	25
	20	93.1
	21	61.3
	22	84.4
Mastoid process, small. ....	23	71.1
Hollow at root of nose, absent .....		
Inferior border nares, curves flattened .....		
Parietal region, very wide on top and flattened, behind, the parietal eminences are separated by a depression at the bottom of which is the sagittal suture, giving the posterior part of the skull a natiform appearance. The left side projects farther backward than the right and is much more prominent laterally .....		

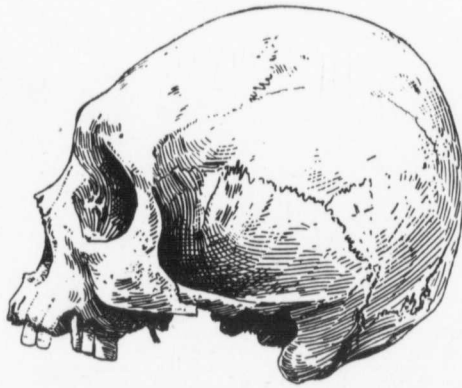


Fig. 127. B. (Brit. Columbia.)

*Cranioscopy.**Craniometry.*

		Millimetre.
Artificially deformed.	1	170
Age, 60 .....	2	156
Sex, male .....	3	123
Sutures, almost obliterated .....	4	103
Pterion, H .....	5	120
Artificially lengthened, occipital foramen I....	6	118
Lateral parietes, bulging, left more prominent than right .....	7	11
Glabella, medium .....	8	130
Superciliary ridges, medium .....	9	112
Frontal eminences, absent .....	10	69
Forehead, retreating .....	11	46
Curve of vault, culminates at bregma, then flattened as far as a point situated between the parietal eminences, whence it descends almost perpendicularly to inion..	12	313
Inion, 3 forms a rounded prominence two inches in diameter .....	13	228
Probola, flattened .....	14	282
Sub-iniac curve, slight .....	15	510
Mastoid process, short, rounded, thick .....	16	87
Hollow at root of nose, shallow .....	17	145
Inferior border nares, heart-shaped .....	18	51
Root of nose, wide and flat .....	19	27.5
Parietal region, very wide behind. When viewed from above is triangular in shape with line between parietal eminences as a base. Right parietal bone more prominent posteriorly than left .....	20	91.7
	21	66.0
	22	85.8
	23	72.3



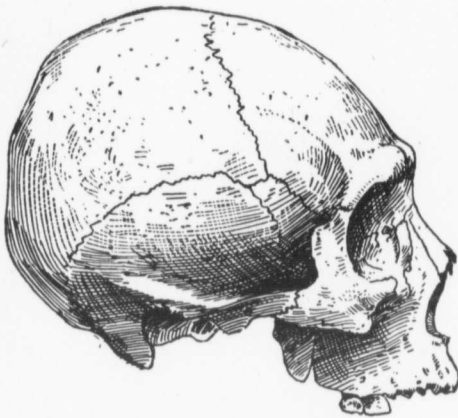


Fig. 128. C. (Brit. Columbia.)

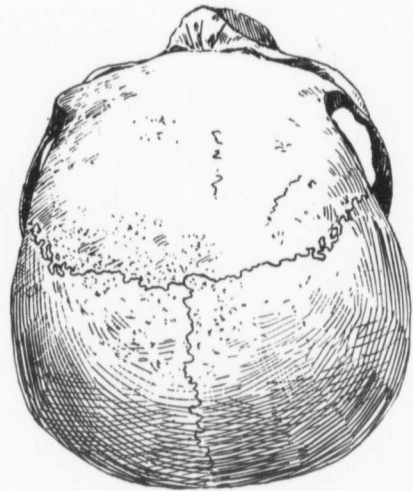


Fig. 129. C. (Brit. Columbia.)

*Cranioscopy.**Craniometry.*

		Millimetre.
Age, 30.....	1	170
Sex, male.....	2	159
Sutures, lambdoid takes an irregular course ..	3	126
Pterion, H, bridge very narrow.....	4	100
Artificially lengthened occipital foramen, O. ....	5	109
Lateral parietes, very full.....	6	117
Glabella, very prominent.....	7	15
Superciliary ridges, medium.....	8	105
Forehead, retreating.....	9	110
Frontal eminences, absent.....	10	60
Inion, 1.....	11	52
Probola, flat.....	12	320
Sub-iniac curve, extends below condyles.....	13	232
Mastoid process, small pointed.....	14	286
Wormian bones, five present. A small one at	15	518
posterior termination of sagittal suture.	16	98
One large and two small in lambdoid suture	17	146
on right side, and a small one just above	18	56
mastoid region in left lambdoid.....	19	25
Hollow at root of nose, shallow.....	20	90.3
Inferior border nares, curves run sharply up-	21	62.2
ward and outward.....	22	91.7
	23	74.1

See page 60 for Key to Measurements.



Fig 130. D. (Mound, Arkansas.)

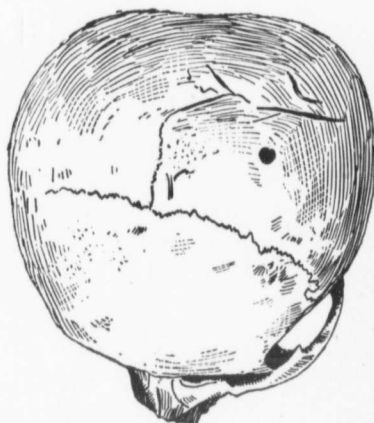


Fig. 131. D. (Mound, Arkansas.)

*Cranioscopy.*

Lower part of occiput broken.	1
Age, 40.....	2
Sex, female.....	3
Sutures, simple, sagittal depressed posteriorly	4
Pterion, H.....	5
Artificially lengthened occipital foramen posterior border of foramen broken.....	6
Lateral parietes, moderately prominent.....	7
Glabella, small.....	8
Superciliary ridges, small.....	9
Forehead, receding.....	10
Frontal eminences, very small.....	11
Inion, 0.....	12
Probola, flat.....	13
Sub-iniac curve, flat.....	14
Mastoid process, small.....	15
Hollow at root of nose, shallow.....	16
Inferior border nares, curves wide and shallow.....	17
	18
	19
	20
	21
	22
	23

*Craniometry.*

Millimetre.

1	150
2	144
3	143
4	92
5	123
6	109.5
7	13
8	94
9	120
10	62
11	
12	322
13	220
14	250
15	470
16	96 (app.)
17	133
18	55
19	27
20	96.
21	63.8
22	74.7
23	95.3

See page 60 for Key to Measurements.