

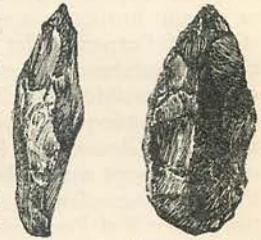
PREHISTORIC REMAINS IN THE OHIO VALLEY.¹



F the many prehistoric remains of America none are of greater interest than the embankments, forming squares, circles, and other figures, in the Ohio Valley. All through the Mississippi Valley, however, are found works of a similar character, as well as along the many tributaries of this great water route, by which a people from the south could have reached, and probably did reach, the central and eastern portions of our continent. Everywhere, from the Gulf northward to the Great Lakes, and even beyond them in the Northwest, as well as eastward to the Alleghanies and to the Southern Atlantic coast, are earthworks which have much in common with those of the Ohio Valley when the latter are considered as a whole. In Ohio, and particularly in the valleys of the Muskingum, the Scioto, Brush Creek, the Little Miami and the Big Miami, and along their tributaries, are many "prehistoric monuments," or earthworks and mounds, of singular forms and of unquestionable antiquity. Associated with these are mounds and works of later times, some of which were made by the historic tribes or their immediate ancestors. Studied as a whole this valley affords undoubted evidence of successive occupation by different peoples, some of whom probably made it a brief abiding-place, while others were lost by absorption, or, possibly in some instances, were driven out by their successors. The fortified hills and other defensive works in the valley suggest many a long struggle, while the admixture of crania of different forms in some of the burial-places is evidence of the mixing of different peoples; and what more likely than that of the conquered with the conquerors? A discussion of the complicated and much-disputed question of the unity or diversity of the Americans would lead far away from the special subject of this paper, and it is only essential for the present purpose to recall a few important points bearing upon the archaeology of the Ohio Valley.

¹ With the exception of the "implement chipped from a pebble," the original of which is in the Peabody Museum at Cambridge, the illustrations in this preliminary article are redrawn, by permission of Prof. S. P. Langley, from "Smithsonian Contributions to Knowledge."

First of all we must remember that this valley was inhabited by man at a period so remote as only to be approximately stated in years; but that at least ten times ten centuries have passed away since the implements of stone, fashioned by this early man, were lost and covered by the overwash of the glacial gravels as the great ice-sheet melted in its retreat to the north, and the rivers cut their way through the gravel it had deposited along its southern border. The discovery of such stone implements in the Ohio gravels was made by Dr. C. L. Metz of Madisonville, Ohio. These were found under the same conditions, and in gravels of the same geological age, as those previously discovered in the Delaware Valley at Trenton, N. J., by Dr. C. C. Abbott, who was the first to find and recognize the works of paleolithic man in the gravel-beds of eastern America. Since the discovery in the Ohio gravels, Mr. Hilborne T. Cresson of Philadelphia has found a chipped stone implement in the gravel-bed of corresponding formation, on White River, in Indiana.² The mastodon and the mammoth were the contemporaries of this paleolithic man, and from the distant time of his advent to the present successive peoples have inhabited the Ohio Valley.



IMPLEMENT CHIPPED FROM A PEBBLE OF BLACK CHERT, FROM OHIO GRAVEL EIGHT FEET FROM SURFACE. SIDE AND FRONT VIEW. HALF SIZE.

The evidences of a more recent past are the old village sites with their shell heaps or refuse piles, the earthworks of various shapes, the burial-places, and the fortified hills. Besides these are the mounds of earth, or of stone, marking the graves of leaders among the people, or indicating a tribal or a family burial-place, or, perhaps, a sepulcher of those who fell on some important occasion, as may sometimes be told when the mound is examined and its contents carefully studied. These tumuli are thus of different kinds, and the condition of the remains found in or under them, with the more or less

² Mr. Cresson has also found several stone implements in the older, or Columbia, gravel in Delaware. This discovery implies that man lived in the Delaware Valley at a time long preceding the deposition of the great mass of gravel upon which the city of Trenton is built.

marked changes which have taken place in the constituents of the structures themselves, shows that some are very much older than others. Often near these sepulchral monuments are extensive cemeteries of which there is no sign on the present surface of the ground, but on removing the dark soil formed by the decay of vegetation during many centuries, a former surface is reached on which are piles or rows of stones marking the graves. In other places, sometimes near and in other instances having no connection with mounds of earth or stone, are cemeteries of other kinds. In some there can still be seen, partly buried by the dark soil, the stones placed around or over graves; or again, there are large burial-places with no external sign of the hundreds and even thousands of skeletons that lie buried in the dark soil or in the clay below it, according to the thickness of the soil at the particular spot.¹

These several conditions and circumstances of burial show conclusively that the burial-places are of different periods, some quite recent and others very old, while others again are of times between. The differences in the modes of burial certainly suggest different customs, which presumably indicate a difference, greater or less, among the peoples of various times.

Bearing upon this point of different peoples we find that the prevailing form of the skulls from the older burial-places across the northern portions of the continent, from the Pacific to the Atlantic, is of the long, narrow type (dolichocephalic), while the skulls of the old peoples of Central America, Mexico, and the southwestern and southern portions of the United States are principally of the short, broad type (brachycephalic). Following the distribution of the long and short skulls as they are now found in burial-places, it is evident that the two forms have spread in certain directions over North America; the short or broad-headed race of the south spreading out towards the east and northeast, while the long or narrow-headed race of the north has sent its branches southward down both coasts, and towards the interior by many lines from the north as well as from the east and west. The

two races have passed each other here and there. In other places they have met; and probably nowhere is there more marked evidence of this meeting than in the Ohio Valley, where have been found burial-places and sepulchral mounds of different kinds and of different times.² This variation in the character of the burial-places agrees with the skulls found in them. Some contained the brachycephalic type alone; in others, both brachycephalic and dolichocephalic forms were found with many of the mesocephalic or intermediate form; indicating a mixture of the two principal types, which seem to be of different races or subraces, notwithstanding that several writers, whose opinions must have weight, regard all the native people of America — most, however, excepting the Eskimo — as of one race.

That there is now a certain uniformity in characters and customs among all the native peoples, even including the Eskimo, is unquestionably the case. This degree of uniformity, we can readily believe, may be the result of long contact of two or more distinct races, brought about by intertribal communication, by warfare, by absorption or by union, as well as by the subdivision of tribes, which, as the centuries rolled on, probably have met and separated, again and again, in the vicissitudes of war, or from the necessities of life, or in wanderings over the land. A certain uniformity would thus in time be brought about. But that there was only a single race originally upon the continent, and that an autochthonous one, or, as other writers would have us believe, a group of the "one race of man," from which all the differences in physical characters, as well as of language, customs, and arts, have been developed, seems more difficult of conception when the diversities are studied with as much care as the resemblances have been. So many great and primary differences offer themselves for our consideration that if we give to the facts their true significance we seem compelled to admit, for the present at least, the following groups of North Americans, to each of which the term race or variety may be applied, according to the more

¹ During the explorations in the Little Miami Valley by Dr. Metz and myself, conducted for the Peabody Museum of American Archaeology and Ethnology at Harvard University, we found over fifteen hundred graves in one cemetery, and several hundred in each of the others, and have not yet completed the exploration of any one of these three burial-places.

² The late researches of Professor Virchow, in relation to the ethnology of Egypt, are of particular interest in connection with the corresponding facts in America. Professor Virchow has called attention anew to the existence of the early stone age in Egypt, or the paleolithic man of the Nile Valley. After him came the short-headed race of the ancient Egyptians, with which the Egyptian sculptures agree; then the long-headed

race. But with this change of race the peculiar character of early Egyptian art has been retained.

The comparison may well be made in America. Here was also paleolithic man; here also a short-headed early race, far advanced in the arts, and in the early stages of hieroglyphic writing, with a well-organized social system, and a priesthood of great power — the Mexicans, Central Americans, and Peruvians. Here also was a long-headed race which came into contact with a branch of the more highly developed race; and here we have the mixture of to-day, the Indians, agreeing in many things among themselves, yet widely differing in physical character, in their arts, and in language; and among these we find the survival of ancient arts and customs.

or less restricted sense in which we use the term race.

I. The Preglacial or Interglacial race, or Paleolithic man, probably with small oval heads. This race may have been autochthonous, or a very early migrant from northern Europe; and it may have become mixed, in later times, with numbers two and three; otherwise its descendants cannot be traced.

II. The "Eskimo," with long heads. This may have been an early offshoot of number three, or a distinct race early migrating from the old world, and probably very early mixed with number one.

III. The Dolichocephali of the northern and coast regions, bordering on the Eskimo and spreading southward. Early emigrants, probably originally from the northern portions of Asia, and probably mixing somewhat with number two, and unquestionably largely with number four.

IV. The Brachycephali of the southwest. Early emigrants, probably from Central and Southern Asia, extending eastward and northward in North America, and mixing with number three; while in South America it extended down the coast and into the interior, mixing with a dolichocephalic Andean race.

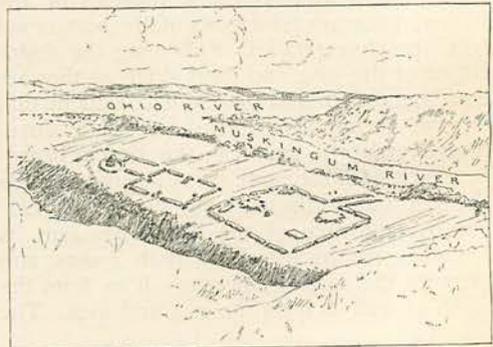
These groups, call them by what name we will, are the principal ones in North America—though there are possibly others that will find places here and there, as for instance the Caribs in the Gulf region—from which are composed the Americans, or, as they are called, the Indians, with all their resemblances and differences. With this understanding, should we use the term "Indians" as coequal with that of "native tribes of America," we can then accept the belief that out of all these elements there has at last resulted a certain uniformity in the physical characteristics, and an amalgamation of myths, customs, and arts, which have virtually brought about a distinct American race or variety of man; just as it is claimed that the white man in America is slowly but surely assuming marked physical and mental characteristics, which, in time, as the absorption and amalgamation go on, will result in forming a distinct group within the race.

A CENTURY ago a little band of pioneers, under the leadership of General Rufus Putnam, floated down La Belle Rivière and landed at the mouth of the Muskingum, where they made the first permanent Anglo-American settlement in the great Northwest territory. When they

¹ Published in Boston in 1805. This volume contains a bird's-eye view of the ancient works, reproduced in Winsor's "Narrative and Critical History of America," Vol. I. In several respects an early painting, copied by Sullivan for the frontispiece of Squier

landed they were met by a number of Indians of the Delaware tribe who had come to trade at the neighboring military station of Fort Harmar. The Wyandots, Delawares, and Shawnees, as well as the Mingoes, Miamis, Chippewas, Ottawas, Pottawattamies, Sacs, and Senecas, had towns in various parts of the territory between Lake Erie and the Ohio. The Wyandots claimed that the Shawnees were living on the lands by their permission and did not own the land; and the Iroquois claimed much of the region by right of conquest, and accordingly took part in the treaties with the whites. With few exceptions the Indian towns were back from the Ohio River, on the south as well as the north, all the way down to the Big Miami. Hildreth, in his "Pioneer History of the Ohio Valley," calls attention to this fact, and says that the traditions of the Indians show that the Iroquois, their merciless enemy from the north, invaded the country along the river and drove them from its banks.

The white settlers, while well acquainted with these facts, had no knowledge of the predecessors of the Indian tribes of the valley, and little thought when they landed at the mouth of the Muskingum that they were to lay the foundation of a city over the very ruins of the homes and sacred altars of another race, who, many centuries before, had been a numerous people in the valley. When these ancient works at Marietta were first seen by the settlers they were covered with a heavy growth of forest. Harris, in his "Tour to Ohio," in 1803,¹ quotes the following statement



ANCIENT EARTHWORKS AT MARIETTA, OHIO.
(FROM A LITHOGRAPH FROM A PICTURE, AND FROM
THE SURVEY BY WHITTLESEY.)

from the Rev. Dr. Manasseh Cutler, who was in Marietta a hundred years ago. Says Dr. Cutler:

When I arrived the ground was in part cleared, but many large trees remained on the walls and

and Davis's volume, gives a better idea of the works. For details the two drawings should be compared with the survey by Whittlesey, in "Ancient Monuments of the Mississippi Valley."

mounds. The only possible data for forming any probable conjecture respecting the antiquity of the works, I conceived, must be derived from the growth upon them. By the concentric circles, each of which denotes the annual growth, the age of the trees might be ascertained. For this purpose a number of the trees were felled; and, in the presence of Governor St. Clair and many other gentlemen, the number of circles was carefully counted. The trees of the greatest size were hollow. In the largest of those which were found there were from three to four hundred circles. One tree, somewhat decayed at the center, was found to contain at least four hundred and sixty-three circles. Its age was undoubtedly more than four hundred and sixty-three years. Other trees in a growing state were, from their appearance, much older. There were likewise the strongest marks of a previous growth as large as the present. Decayed stumps could be traced at the surface of the ground, on different parts of the works, which measured from six to eight feet in diameter. In one of the angles of a square a decayed stump measured eight feet in diameter at the surface of the ground; and though the body of the tree was so moldered as scarcely to be perceived above the surface of the earth, we were able to trace the decayed wood, under the leaves and rubbish, nearly a hundred feet. A thrifty beech, containing one hundred and thirty-six circles, appeared to have first vegetated within the space that had been occupied by an ancient predecessor of a different kind of wood.¹

This of course gives only the minimum age since the works were deserted, and probably will not exceed six to eight hundred years. How many forest growths had preceded this we cannot tell; we only know that in many instances ancient mounds and earthworks in the Ohio Valley were cleared of forest growths

of the same character and apparently of the same age as those about them, which we call the primeval forest. The deep deposit of dark soil or vegetable mold upon the sides and summits of the banks of clay also gives a record of many centuries.

Alas that hardly one of these ancient earthworks is left in its entirety! Here and there the more massive walls have resisted the plowman, and portions of others have been permitted to stand untouched. A few might yet be saved from further destruction, and, with some portions judiciously restored, might be preserved. Can we not do something to perpetuate these simple tokens of another race for the study of future generations in this land which we call ours only by the right of might, as others in the past have called it theirs?

Particular attention is directed to this group of earthworks at the mouth of the Muskingum; not only because they were sketched and described at a comparatively early time, but from the fact that they are the most easterly of the great works in Ohio. There are, however, many inclosures and mounds of various kinds still farther eastward, as well as in all other directions from the Ohio River. The largest conical mound in the valley is at Grave Creek, near Wheeling, West Virginia; another, nearly as large, at Miamisburg, in the valley of the Big Miami, is the most westerly monument of considerable size in Ohio. The next group to which it is important to call attention is near Newark, at the forks of the Licking, the western tributary of the Muskingum, sixty or seventy miles northwest from the Marietta works. As will be seen

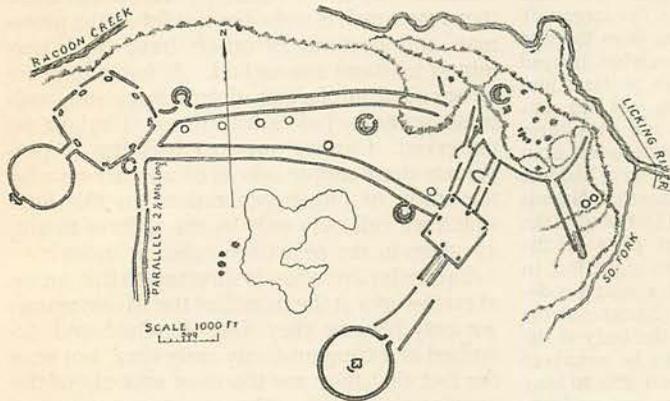
¹ Of late years several writers have brought forward many arguments showing anew, what every archæologist of experience knows, that many of the mounds in the country were made by the historic tribes. This has been dwelt upon to such an extent as to make common the belief that *all* the mounds and earthworks are of recent origin. Some writers even go so far as to imply that tree growth cannot be relied upon, and state that the rings of growth do not represent annual rings. As I am firmly convinced that many of the mounds and earthworks in the Ohio Valley examined by Dr. Metz and myself are far older than the forest growth in Ohio can possibly indicate, it matters little about the age of the trees growing over such mounds. However, as such a forest growth gives us the minimum age of these ancient works, it is important to know what reliance can be placed on the rings. In his report for 1887, Prof. B. E. Fernow, Chief of the Division of Forestry in the United States Department of Agriculture, discusses the formation of the annual ring, when speaking of tree growth. In a letter recently received from him, in which he points out the probable cause of error in counting the rings of prairie-grown trees, he states that he considers "anybody and everybody an incompetent observer of tree growth who would declare that, in the temperate zones, the annual ring is not the rule, its omission or duplication the exception."

Having received repeated assurances to this effect from other botanists, I recently again asked the question of Prof. C. S. Sargent, Director of the Arnold

Arboretum, from whom I received the following reply: "I have never seen anything to change my belief that in trees growing outside of the tropics each layer of growth represents the growth of one year; and as far as I have been able to verify statements to the contrary, which have appeared of late years, I am unable to place any credence in any of them. The following sentence, quoted from the last edition of Professor Gray's 'Structural Botany,' covers the case: 'Each layer being the product of only a year's growth, the age of an exogenous tree may in general, be correctly estimated by counting the rings of a cross section of the trunk.' I believe, therefore, that you are perfectly safe in thinking that Dr. Cutler's tree is something over four hundred and fifty years old."

Another matter worthy of careful consideration in regard to the antiquity of many of the large earthworks in the Ohio Valley, first suggested by Prof. M. C. Reed of Hudson, Ohio, is the theory that these works may have been made before the forest had encroached on the great alluvial plains where the works are commonly situated. When we recall the fact that the valley was certainly inhabited by one race at the close of the ice period there, and that a long time must have elapsed before the rivers cut their way to their present channels, and before the forest growth could have covered the old river beds, there seems to be much that is suggestive in this theory; and I have certainly observed some facts in the Little Miami Valley which apparently confirm it.

by the accompanying plan of the principal embankments,¹ there are many complicated structures, covering an area about two miles square. Many of the walls or embankments were probably not over four feet in height. Those forming the square, the octagon, and the smaller circle were nearly six feet high. The



ANCIENT EARTHWORKS NEAR NEWARK, OHIO.
(AFTER A SURVEY BY WHITTLESEY; SQUIER AND DAVIS.)

larger circle has an embankment twelve feet high and fifty feet wide at the base, with a ditch around the inside over thirty feet wide and seven feet deep. At the entrance the walls are sixteen feet high, and the ditch is here thirteen feet deep. These figures give an idea of the magnitude of this complicated earthwork, which is also of particular interest on account of the singular structure within the "great circle."² Here a group of four mounds is so arranged as to constitute an unbroken outline having somewhat the appearance of a bird with spread wings. In front of this group is a low crescent-shaped embankment about two hundred feet in length.

Near this most northerly of the important ancient works in Ohio is an effigy mound, known as the "alligator," situated upon a headland nearly two hundred feet high. The effigy is about two hundred feet long, and forty feet wide across the body, with legs about thirty-six feet long. Near one side of this figure is a pile of burnt stones designated as the altar.

The third important group of ancient works to be referred to is about one hundred miles southwest from Marietta and about the same distance south of Newark. These works are

situated at the mouth of the Scioto, and are known as the Portsmouth works, although the group extends for two or three miles on the Kentucky shore as well as on the Ohio side, embracing over twenty miles of embankment. Here were about eight miles of parallel embankments,³ resembling those of the Newark works, with a square, circles, and other figures. On the Kentucky side is a beautiful conical mound, surrounded by a deep ditch, outside of which is a high wall. This closely resembles the conical mound, with its ditch and wall, connected with the Marietta works and preserved in the city cemetery.

Five miles up the Scioto River, upon the level second terrace, sixty or seventy feet above the river, is an oval inclosure within which is a large irregularly shaped mound, made principally of gravel, which is certainly the effigy

of an animal, and more like an elephant or a mastodon than any other. Still farther up the Scioto, particularly for several miles below and above Chillicothe, are many earthworks of various kinds—squares, octagons, circles, crescents, and parallels, with many hundred mounds. Along Paint Creek, the western tributary of the Scioto, are many more inclosures and mounds of a similar character.

Some fifteen to twenty miles south of the Paint is the east branch of Brush Creek, which, flowing south, enters the Ohio about thirty miles below the Scioto. In this southern portion of Ohio the country is broken and hilly, reminding one more of New England than of the country to the westward. The branches of Brush Creek have their source among these hills, and in the valleys are several earthworks and a number of mounds. One of the highest of several hills along the East Branch is known as Fort Hill, on account of the wide and high wall of stones, inclosing an area of forty acres, raised in ancient time around its summit. This artificial wall, in many places twelve or more feet in height, joins the precipitous sides of the hill, and, like them, is thickly covered with forest

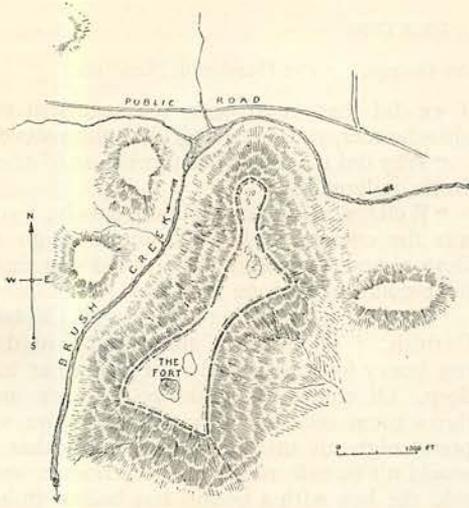
¹ After a survey by Colonel Whittlesey; from Squier and Davis's "Ancient Monuments of the Mississippi Valley." "Smithsonian Contributions to Knowledge," Vol. I. (1848).

² This is not a true circle, as the diameters are 1150 by 1250 feet, according to Squier and Davis, whose measurements are here followed. They also state that the distance between the deep ditches at the entrance is eighty feet. "Here, covered with the gigantic trees

of a primitive forest, the work presents a truly grand and impressive appearance" (p. 68). Mr. Middleton has made a recent survey of this group, and gives the diameter of the "great circle" as 1186 by 1163 feet. For a discussion of these measurements see paper by Dr. Cyrus Thomas of the Bureau of Ethnology, Smithsonian Institution, 1889.

³ Portsmouth is built over a portion of the embankments now destroyed.

trees, from among which many a noble oak has been brought low by the woodman's ax, as shown by stumps¹ still standing upon the walls.² Following down the East Branch some eight



FORT HILL, HIGHLAND COUNTY, OHIO.
(FROM SURVEYS BY SQUIER AND DAVIS, AND BY OVERMAN.)

or ten miles its forks are reached, and just below them, on the east side of the creek, is a headland which juts out, a scraggy, rocky ledge, a hundred feet above the level of the waters of the creek. An overhanging cliff, seventy-five feet above the hillside, forms the upper part of this great mass of rock, and it requires but little imagination to trace in the terminal outline of this ledge the form of the head and open jaws of a huge serpent.³ On the sur-

face of this headland, a short distance from the bare ledge, begins the great earthwork now everywhere known as the "Serpent Mound."

Following Brush Creek some thirty or forty miles, as it winds its way to the Ohio, several mounds and a few small earthworks can be seen. Still farther to the west, in what is now the southwestern corner of the State of Ohio, are many ancient works of the same general character as those in the Scioto Valley. On the site of the city of Cincinnati, about seventy miles from Brush Creek, were inclosures and mounds, and in the valley of the Little Miami are many works of remarkable interest. In one group in particular much of importance was found relating to the sacred customs, the arts, and the conditions of the people who formed the ancient works to which special reference has been made. In this valley, too, is "Fort Ancient," the largest of the works known as fortified hills, where an embankment four miles in extent, with numerous openings, surrounds the hill and incloses an area of about one hundred acres. In the valley of the Big Miami are many more inclosures and earthworks of various kinds, with another fortified hill, which has a complicated system of walls at the entrance of the fort. These are the most westerly of the ancient works in Ohio, and the last to which reference can now be made.

With this brief preliminary of some of the important points to be kept in mind in a study of any one of the ancient works of the Ohio Valley, we can proceed, understandingly, to the special consideration of the Serpent Mound, a unique structure situated in the midst of this great system.

¹ One of these stumps measures seven by nine feet in diameter two feet above the wall upon which the tree grew, and it was cut down at least fifty years ago.

² The Western Reserve Historical Society of Cleveland is endeavoring to raise a fund for the purchase and preservation of this interesting fortification, and

it is to be hoped that success will soon attend its efforts in this most laudable work.

³ This resemblance was first noticed by Dr. Peet in the "American Antiquarian," and was afterwards elaborated by Mr. Holmes in his sketch of the cliff published in "Science" Vol. VIII., p. 627 (1886).

F. W. Putnam.

IN MEMORY OF FATHER DAMIEN.

MORE royal than the minever of kings
The robe of tortured flesh that clothed his soul,—
The martyr, reaching out an eager hand
To clasp the cup of bitterness and dole.

And lo! we see through tears the signs divine
Of sainthood that the ancient tales repeat.
Stigmata were the loathsome ulcer-wounds
Disease had marked in holy hands and feet!

Anne Reeve Aldrich.