tionately than the breadth of head. This is shown by the rapid rise of the curve of the index. That the increase is actually greater than the width of face we have already seen. The breadth of face as compared with the breadth of head is greater in the case of girls than in the case of boys until the fifteenth year, at which time the boys' curve becomes the higher, falling again the next year, and rising finally in the seventeenth year.

Breadth of Face to Length of Head (6).— As in the index just discussed, the breadth of face increases more rapidly proportionately than does the length of head. We have the index of the girls higher than that of the boys until about the sixteenth year, when the two curves intersect, that of the boys becoming the higher for one year, and again falling below in the eighteenth year.

We see, therefore, that in proportion to the length of head, the width of head and the width of face of girls are generally greater than those of boys, and that in proportion to the width of head the width of face also is greater in girls than in boys.

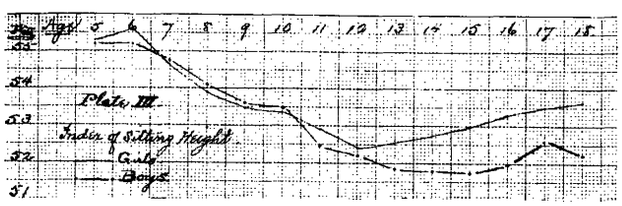
Body measurements (Plate II.):—

1. Sitting height.— Vertex to oleacronon, approximately.
2. Stature.— Standing erect without shoes.
3. Weight.—In in-door clothing.
4. Comparison of length of head to stature, expressed in per cents of stature.

Plate III.:—

Index of sitting height.— Comparison of sitting height to stature, expressed in per cents of stature.

The Stature (2).— Taking the stature as properly first in order, we find the boys starting out at five years of age apparently taller than the girls, but the girls appear to catch them in the seventh year and continue at an equal stature up to and including the



ninth year, after which the boys again rise above the girls for two years. At about the twelfth year the girls suddenly become taller than the boys, continuing taller until the fifteenth year, when the boys again and finally regain their superiority in stature. After the age of seventeen, there seems to be very little if any increase in the stature of girls while the boys are still growing vigorously at eighteen, and probably continue to grow for several years after that age.

The intersection of the two curves at the ages of twelve and fourteen is a more accentuated instance of the phenomenon which we have already met with in the curves of the diameters of the head and face. We shall see it again in the curves of sitting height and of weight.

The Sitting Height (1).—The curves of the sitting height present the same characteristics, somewhat more accentuated, as the curves of stature. The boys start out at five the taller, but by the next year the girls are of equal stature and continue equal until and including eight years of age. From eight until eleven the boys are again the taller. In the eleventh year, nearly a year earlier than in the case of stature, the girls shoot ahead of the boys, the latter not regaining their superiority until the fifteenth year, about half a year later than in the case of stature. Again, we find the girls' curve stopping abruptly at seventeen, while the boys continue to grow for some years longer.

The Weight (3).— The curves of weight, while preserving the general characteristics of the curves of stature and sitting height, show minor differences. The boys are in all years from five to eleven inclusive heavier than the girls. From the twelfth to the fourteenth year the girls are the heavier. From fourteen on the boys are again superior in weight. The superiority of the girls in respect to weight is for a much shorter period than in respect to total height or sitting height.

In weight, also, the girls seem to reach their maximum average at seventeen, the boys continuing to increase in average weight until a much later period in life.

Comparison of Length of Head to Stature (4).— The curves of this index bear a strong resemblance to those of stature. From this comparison it seems that until the fifteenth year the length of head of girls is less in proportion to their stature than is that of boys to their stature. At fifteen the ratio of the boy's length of head to their stature suddenly drops, while that of the girls gradually rises, indicating that in the adult the heads of women are proportionately longer than those of men. This is also true of the width of head and the width of face.

The Index of Sitting Height (Plates III.).— These curves, starting at a high per cent at five years of age, drop rapidly until the twelfth year in the case of girls and the fifteenth in the case of boys. From the twelfth year on the girls' curve rises; from the fifteenth to the seventeenth years, inclusive, the boys' curve also rises, but drops again during the next year. These movements of the curves seem to indicate that the greater part of the growth in stature, up to the twelfth year in the case of girls and until the fifteenth year in case of boys, is made in the lower limbs, while after these respective ages it is made in the trunk. Except for about two years, throughout the period from five to eighteen, the limbs grow more rapidly than the trunk in boys, while in the case of the girls the period of greater comparative growth is divided nearly equally between the extremities and the trunk. Except from about the seventh to the tenth year, the trunk is proportionately longer in girls than in boys, after the thirteenth year the difference is much more marked.

As we found in the case of the diameters of the head and face, girls grow more rapidly than boys up to twelve years of age, less rapidly after that age. Comparing the two periods, we find that in the case of stature and sitting height the annual rate of increase for girls is considerably less after twelve than it was before it. The boys maintain the same rate throughout. Although both sexes make greater annual rates after than before twelve, yet the girls make their greatest absolute increase before, the boys theirs after, that period.

These results seem conclusive evidence that women reach maturity several years before men. There seems little doubt that for all the measurements of the body, except the weight, girls have completed their growth by the eighteenth year.

BIRD-MUSIC IN AUGUST.

BY MARY HYATT, STANFORDVILLE, N.Y.

MUCH has been written about the songsters of spring and early summer, but there is something of a lack of information concerning the birds that sing in August. It would be interesting to compare notes from different localities on this subject.

Bird-music in this month of oppressive heat is doubly welcome, and the few singers that help to enliven the sultry days should receive their share of attention and praise.

Burroughs says that there are but four songsters that he hears "with any regularity after the meridian of summer is past, namely, the indigo bird, the wood or bush sparrow, the scarlet tanager, and the red-eyed vireo." He further observes that "birds sing as long as nidification goes on. . . . Hence our wood-thrush will continue in song into August if, as frequently happens, its June nest has been broken up by the crows or squirrels." The wood or bush sparrow mentioned is, we think, Spizella pusilla, a faithful little minstrel of morn and eve all through the heated term. The goldfinch, whose lively notes as he dips and rises through the air are so prominent in mid-summer, and whose canary-like song is occasionally heard, should certainly be included among August songsters. With us the yellow throated vireo is as regularly tuneful in August as the red-eyed, while the white-eyed vireo is heard now and then.

In a note-book kept through August of 1889, we have an account of such birds as were in song for many days during the month in our vicinity. Beginning Aug. 3, we have on record: Indigo bird, chewink, Baltimore oriole, wood pewee, red-eyed

vireo, phebe bird, song, field, and chipping sparrows. When out riding on Aug. 4 we heard the strain of a meadow lark, and on the 6th the noisy tirade of a white-eyed vireo.

On Aug 8 the note-book tells of a fine concert, when a goldfinch, an indigo bird, field, song, and chipping sparrow sang, an oriole whistled a few times, and a yellow-throated vireo was tuneful by spells for a long while.

Aug. 15. Red-eyed vireo, chewink, and field sparrow; 16th, yellow throated vireo, phebe, goldfinch; 17th, oriole, chewink; 18th, red-eyed vireo; 19th, yellow-throated vireo, and "orioles make themselves heard nearly every morning now." Aug. 21, field sparrow, wood pewee, and black and white warbler.

Aug 29. "The yellow-throated vireo sings nearly every day — almost the only bird we hear nowadays. Yesterday we noticed the songs of a goldfinch and a song-sparrow; chickadees also were musical." This closes the month's record, but it is noted down as something unusual, that the yellow-throated vireo continued to sing during every forenoon for the first six days of September.

There are usually a few fiery days in mid-summer when nearly every bird is silenced, but rarely an August morning passes without a salute to the dawn from sparrow or goldfinch.

A RARE FORM OF POLISHED STONE IMPLEMENTS AND THEIR PROBABLE USE.

BY WALTER HOUGH, WASHINGTON, D.C.

AMONG the collections from Mexico, Central and South America, exhibited in the Columbian Historical exposition at Madrid, the writer noticed a number of oblong polished blocks of hard stone of unknown use, averaging 3¼ inches in length, 2⅜ inches in width, and 1½ inches in thickness. The broad surfaces of these stones are plane, bearing a number of grooves parallel to the length, froming ridges like those seen on Polynesian tapa mallets.

The edges, as a rule, are hollowed out by pecking, seemingly for convenience in grasping the block, so that the section is that of the modern eraser for the blackboard. Often these blocks are only nicked at the corners, and usually two sides and one end only are hollowed out, which seems to indicate that they were mounted in a handle, perhaps by means of a wythe going around the hollowed edge.

In most cases both sides are ridged, one side coarse and the other much finer; a peculiarity noticed in the Polynesian mallet of square section, which often bears four grades of ridges, which are used successively in reducing the bark to thinner texture.

Only one of the blocks seen is round in outline; a few others have rounded corners; the ridges are parallel and the ridged surfaces perfectly flat. An aberrant block of this type, which is probably a stamp, has a convex surface, with sawed diagonal grooves crossing (hatchwork) at either end bounding a band of horizontal lines enclosing shallow bored pits and a central series of shallow bored circles with cores.

The material is usually hard basalt or porphyritic rock, and the channels bounding the ridges are fine examples of sawed work.

The resemblance of these objects to those used by so many different peoples, in beating out fibrous bark for clothing, paper, etc., is very striking. May it not be said that this is a pre-historic implement for the same purpose, and that they give an insight into the manufacture of the paper upon which the Mexican codices are painted? In Costa Rica, Nicaragua, and certain countries of South America, the present aborigines use ridged wooden mallets resembling the Polynesian for making bark clothing.

It may also be affirmed that there is no other form of implement than the one having the combination of ridges and grooves, that is useful in expanding and separating the fibres of bark evenly without rupture, which is evident from the effect produced by the blow.

The distribution of the 31 bark-beaters measured and described by the writer is as follows: Mexico, 25; divided among the Nahuas, (12); Totonacs, (1); Tarascos, (6); and the Miztecs-Zapotics, (6). One of these in the Mexican collection has been channeled, probably by the Tarahumares, and adapted for one side of an arrow-smoother, the other side is a smaller block of freestone of reddish color. This was taken from a cave anciently inhabited by the Cromachi. Two bark-beaters are from Nicaragua; one in the collection of Dr. Carlos Bovallins of Upsala, Sweden, and the other from the exhibit of the government of Nicaragua. One specimen is from Columbia in the collection of the Archæological Museum of Madrid and three from the exhibit of Costa Rica.

After examining the paper upon which the Mexican codices are written, the opinion is expressed that it is not made from the magney, but is from a tree furnishing bark available for paper, probably of the family to which the mulberry belongs.

ETHNOGRAPHICAL SURVEY OF THE UNITED KINGDOM.

BY E. W. BRABROOK.

IN the early part of 1892, on the suggestion of Professor Haddon of Dublin, the Society of Antiquaries of London, the Anthropological Institute, and the Folk-Lore Society appointed delegates to discuss the means of combined action for obtaining simultaneous observations on the monuments of antiquity, the physical characters of the people, and their customs, traditions, and beliefs in various parts of the United Kingdom. They agreed to seek the co-operation of the British Association, which has local corresponding societies in connection with it, and received authority to act as a committee of that association, with the additions of a delegate from the Dialect Society, and of others specially representing Wales, Scotland, and Ireland. It was generally admitted that the success of the work depended upon its being taken in hand at once, since the forces impelling country folk towards the great towns, and the rapid means of transit from place to place now available to the very poorest, are fast effacing all special local peculiarities, and mixing up inextricably the races of which the population is composed.

The first step of the committee has been to issue a circular to persons known to be well acquainted with the rural districts, requesting them to indicate such villages and places as appear especially to deserve ethnographic study, so that a list might be formed, out of which a selection might afterwards be made for the survey. The villages or districts suitable for entry on the list are defined to be such as contain in general not less than a hundred adults, the large majority of whose forefathers have lived there so far back as can be traced, and of whom the desired physical measurements, with photographs, might be obtained. For such typical villages and the neighboring districts the committee propose to record (1) physical types of the inhabitants, (2) current traditions and beliefs, (3) peculiarities of dialect, (4) monuments and other remains of ancient culture, and (5) historical evidence as to continuity of race. In each such place they will endeavor to obtain the assistance of observers resident in the locality.

The response which the committee have obtained to this preliminary inquiry has been more general and encouraging than they had expected. In some places they have been met with the lament, — this ought to have been done fifty years ago, and it is now too late; but from numerous others, in all quarters of the three kingdoms, they have received information of places where the people are still primitive in their ideas and customs, unaffected by intercourse with strangers, and bear a marked strain of one or other of the races by which this country has been peopled. For the use of these informants, a brief code of directions is being prepared.

This endeavor to record the natural history of the elements which go to make up the population, so far as they can be traced in the localities where its race-elements have remained undisturbed, will, I have do doubt, interest many of those whose ancestors have carried to the United States some recollection of the peculiarities and customs of the people of that part of the United Kingdom from which they sprung.

The Journal of Hygiene will be the name of the *Herald of Health* on the 1st of January, 1893. The *Herald of Health* is now in its 43d year and has been edited since 1866 by Dr. M. L. Holbrook. The journal is published in New York, at $1 a year.