

BIRDS' NESTS AT HOME.

BY E. A. ANDREWS.

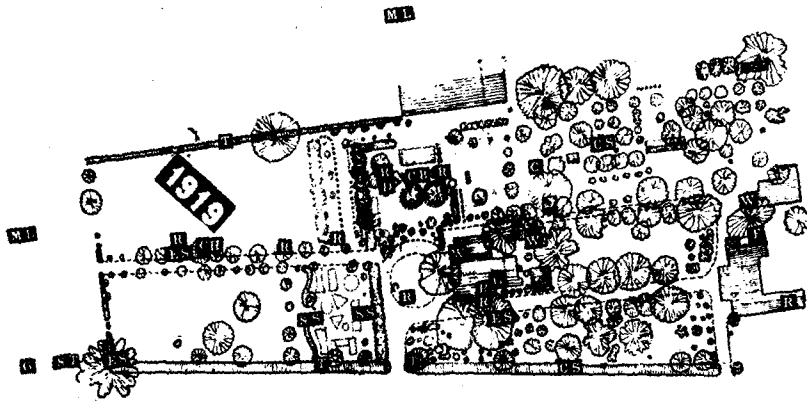
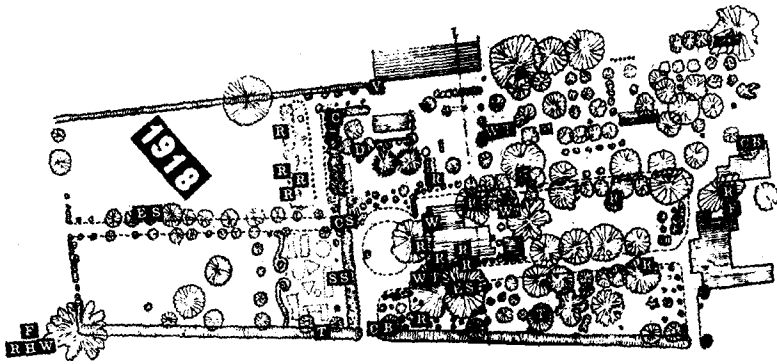
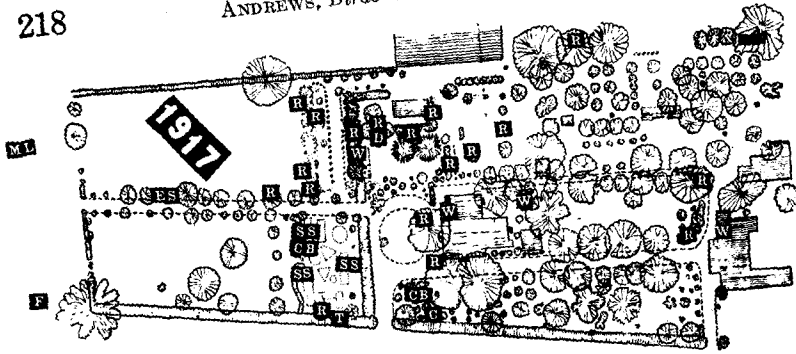
THE following facts refer to the nests of common song birds of Maryland clustering about human habitation on an area of about two and two-thirds acres in a region still partly agricultural though becoming rapidly suburban residential and recently taken from Baltimore County into the political bounds of Baltimore City.

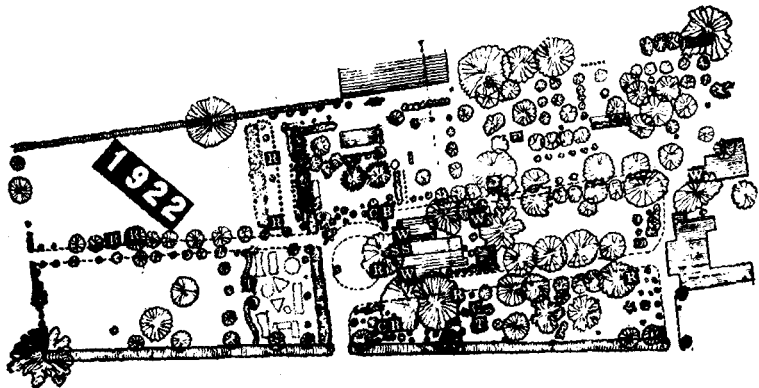
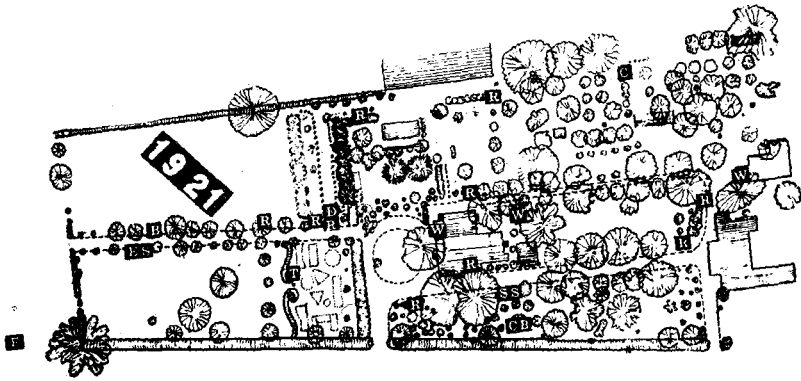
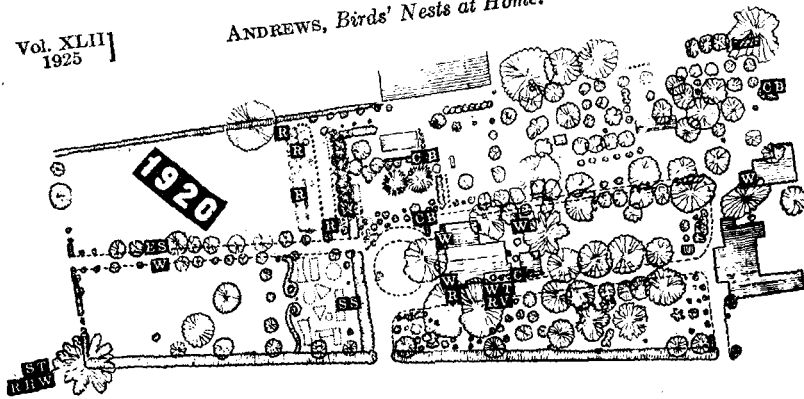
Physically this region is part of the Piedmont plateau with an elevation of 440 feet on a water-shed draining west to Gwynn's Falls and east to Herring Run. Wells dug in the clay to underlying gneiss rock find the water table at thirty to forty feet, hence there is little natural surface water and birds depend much upon fruit and the assistance furnished by water supplies of human making. On the other hand the few large fields of corn, wheat and meadow are of little area compared to the numerous private grounds with their lawns, fruit and shade trees generously supplying opportunities for food and for nesting sites.

The limited area under observation for the past seven years is part of a long cultivated clay soil well kept up, rich in humus and attendant earthworms that satisfy Robins and some other birds. The accompanying maps of the region are intended to illustrate the bird's-eye view of an area very well covered with scattered trees and shrubs, though leaving more lawn and garden earth uncovered than would be at first judged from the maps, since these represent the extreme outside reach of the branches of each plant.

The shrubs are the usual ornamental growths of older plantations, some native, some European, some Japanese; there are extensive privet and box hedges and the trees are Norway and ashleaved maples, black locusts, and especially many apple and pear trees of various ages, as well as enough wild and cultivated cherry trees to supply the many Robins and Catbirds when supplemented by very many raspberry plants. The maps show the birds'-eye location of all trees, shrubs, buildings, trellises, hedges and paths. At the bottom is the public road, the other bounds are those of private lands near residences.

[Auk
April





In the maps the actual location of each nest each year is indicated by initials as follows:

B. Bluebird,	M.L. Meadowlark,
C. Cardinal,	R. Robin,
C.B. Catbird,	R.H.W. Red-headed Woodpecker,
CH. Chewink,	S. Chimney Swift,
C.S. Chipping Sparrow,	S.S. Song Sparrow,
D. Mourning Dove,	ST. Starling,
E.S. European Sparrow,	T. Brown Thrasher,
F. Flicker,	V. Red-eyed Vireo,
G. Purple Grackle,	W. House Wren,
M. Mockingbird,	W.T. Wood Thrush.

It will be seen at once that the distribution of nests is different each year and that the nests are few on the larger—right—end of the area, and on the smaller—left—end, while the scattering of the nests is much more concentrated across the middle of the area, which was the north-south diameter and was close to the residence and adjacent buildings as well as the area of most mixed and heterogeneous plantations of shrubbery, flower garden, grape trellis, cherry tree and small fruits; all rather thickly distributed.

Thus the apple orchard to the right of the map and the lawn to the left were not the regions of most abundant nesting.

From year to year there were very few actual repeats in the use of sites, except for House Wrens and a few others that make use of the same permanent quarters year after year.

The sites actually used for nesting may be classified as more or less connected with human habitation, as in the following four groups, tabulated below. The nests are here divided into four groups: I, built on natural trees, shrubs or vines or else on the ground; II, hollowed out by some birds in wood of trees; III, built upon buildings or trellises or like structures of purely human origin; IV, built in bird boxes provided by man.

This table shows that out of the 180 nests recorded 105 were built on what may be regarded as the more natural or less man-made sites.

Every year the majority of birds were in the first group, building at will on trees, shrubs, hedges or the ground. The second group was always much the smallest, building in the few tree holes that were made by birds.

TABLE I.

	I	II	III	IV	Total
1923	Cardinal..... 2	Flicker..... 1	Dove..... 1	Starling..... 1	1
	Catbird..... 2		Robin..... 4	Wren..... 2	2
	Mockingbird..... 1		Swift..... 1		
	Robin..... 7		Wren..... 1		
	Song Sparrow..... 2				
	Red-eyed Vireo... 1				
	—	—	—	—	—
	15	1	7	3	26
1922	Cardinal..... 1		Wren..... 1	Bluebird..... 1	1
	Catbird..... 2			House Wren..... 3	3
	Robin..... 6				
	Song Sparrow.... 1				
	Brown Thrasher.. 3				
	—	—	—	—	—
	13	1	1	4	18
1921	Cardinal..... 1		Dove..... 1	Bluebird..... 1	1
	Catbird..... 1		Robin..... 6	Flicker..... 1	1
	Robin..... 4			European Sparrow..... 1	1
	Song Sparrow.... 1			Wren..... 3	3
	Brown Thrasher... 1				
	—	—	—	—	—
	8	7	7	6	21

TABLE I. (*Continued.*)

	I	II	III	IV	Total
1920	Cardinal..... 1	Starling..... 1	Robin..... 4	European Sparrow..... 1	1
	Catbird..... 3		Wren..... 1	Red-headed Woodpecker... 1	1
	Robin..... 1			Wren..... 5	5
	Red-eyed Vireo... 1				
	Song Sparrow.... 1				
	Wood Thrush..... 1				
	Brown Thrasher... 1				
	<hr/> 9	<hr/> 1	<hr/> 5	<hr/> 7	<hr/> 22
1919	Cardinal..... 1	European Sparrow 1	Robin..... 3	Flicker..... 1	1
	Catbird..... 2	Flicker..... 1		European Sparrow..... 2	2
	Chewink..... 1			Red-eyed Vireo..... 1	1
	Dove..... 1			Starling..... 1	1
	Lark..... 1			Wren..... 2	2
	Robin..... 7				
	Chipping Sparrow. 2				
	Song Sparrow.... 2				
	Brown Thrasher... 2				
	<hr/> 19	<hr/> 2	<hr/> 3	<hr/> 7	<hr/> 31

TABLE I. (Continued.)

	I	II	III	IV	Total
1918	Cardinal..... 1	Flicker..... 1	Robin..... 8	Flicker..... 1	1
	Catbird..... 2			European Sparrow..... 3	3
	Dove..... 1			Red-headed Woodpecker... 1	1
	Meadowlark..... 1			Wren..... 1	1
	Robin..... 5				
	Chipping Sparrow. 1				
	Song Sparrow..... 1				
	Brown Thrasher... 2				
	Wood Thrush..... 2				
	Red-eyed Vireo... 1				
	—	—	—	—	—
	17	1	8	6	32
1917	Cardinal..... 1		Song Sparrow. 1	Flicker..... 1	1
	Catbird..... 1		Robin..... 5	European Sparrow..... 1	1
	Dove..... 1			Wren..... 3	3
	Meadowlark..... 1				
	Robin..... 12				
	Brown Thrasher... 1				
	Song Sparrow..... 2				
	—	—	—	—	—
	19		6	5	30
	—	—	—	—	—
	Totals..... 100	5	37	38	180

In the third group the Dove and notably the Robin made much use of the grape and rose arbors composed of two rude round posts capped by one split horizontal. The Swifts in the chimney and Wrens in holes made by red squirrels, as well as the Robins on window ledges and porch edges, all made direct use of the house made for man.

In group IV the Bluebird, Starling, House Wren, Flicker, Red-headed Woodpecker and the European Sparrow took possession of boxes and houses erected for their use. While there were but seven such houses available at the maximum, they were nested in 3, 4, 5, 7, 7, 6, and 5 times in the successive years; leaving very few opportunities unused and suggesting that many more such houses might have been used if present.

There were at the most four Wren boxes present and these were occupied 2, 3, 3, 5, 2, 1, and 3 times; some years it was seen that the same box was used for more than one brood.

Of the twenty kinds of birds seen to nest on this area, thirteen made their own nests without protection, while seven used cavities made by man, or in a few cases made by birds. The former were the Cardinal, Catbird, Chewink, Dove, Meadowlark, Mockingbird, Robin, Chipping Sparrow, Song Sparrow, European Sparrow, Brown Thrasher, Wood Thrush and Red-eyed Vireo. The latter were the Bluebird, Flicker, Red-headed Woodpecker, Purple Grackle, Swift, Starling and House Wren.

The distinctions between these four groups are rather artificial and some birds nest in more than one set of conditions indicated by the groups.

Thus the Robin built 42 nests in trees and more natural sites, as many as 12 in one year; but the Robin also built 25 nests partly on the house of man but chiefly on the above mentioned rude arbors. The Dove also nested three times on an old tree that had been so cut in by man as to be an artificial rather than a natural basis for nesting and the Dove built twice on those same rude arbors. It seems then that Torii-shaped erections of round and split logs covered with vines afford an excellent means of readily increasing the sites acceptable to both Robin and Dove.

While this tabulation shows only 37 nests on structures and 38 in man-made cavities out of the entire 180 nests, that is, 75 nests

directly dependent upon man as opposed to 105 self-made by the birds, yet careful observation of many of the sites on trees and other plants suggests strongly that man's help had been often taken advantage of. The trimming of extensive privet hedges, the trimming and crowded planting of shrubbery, and the trimming or pollarding of trees all tend to offer a greater number of good nesting sites than would occur in nature on an equal area. Thus in the wild the number of sites taken in the groups I and II would have been less while the sites in III and IV might have been the same if these purely artificial sites were present.

In this particular area under observation 42 per cent of all nests were directly associated with man, and 58 per cent were built on ground or tree as if without man's aid. However, it may be contended that many of these majority nests were after all indirectly man-aided.

Not only did the trimming of plants supply more good sites, as above suggested, but the whole development of such a suburban area favors the song birds in four respects. Human buildings, man-offered bird houses, plantations of various trees and shrubbery much trimmed, hedges and rough arbors with vines, all increase the nesting sites. Then there is protection, afforded by buildings and trees from winds and hawks, and by man's activities in diminishing attacks of cats and grey squirrels, etc., as well as active avoidance of injury to nest and young.

An important third factor is water for drinking and bathing and this was available as indirect waste of human habitation and sometimes as direct supply in bird baths (though in most years this was not a factor).

Finally there is the essential element of food. With the large variety of weeds, flowers, garden plants, trees, shrubbery, field, lawn, in various states of cultivation and of neglect, insects abound. The well nurtured soil swarms with earthworms that in clay are available most of the breeding season, except it be a very dry year. Raspberries and cultivated cherries aid in the rearing of young. Later, apples, grapes, dog-wood berries, seeds of garden and field with many clematis and "turquoise-vines" make the area agreeable to the young and to migrants.

These attractions draw onto the area more birds than actually

nest there but that are known to nest near by, such as the Cuckoo, Cowbird, Crow, Baltimore Oriole, Screech Owl, Purple Martin, Quail and Hummingbird.

Assuming that the four factors, water, food, protection and good nesting sites were active in bringing about the often repeated use of this area by the birds, we will state the data in a second table that presents the names of the twenty species and the number of nests each made each year; also the maximum and minimum number of nests each year and the average for the seven years expressed as sevenths, to make clear the actual sum of nests of each species for the seven years, as numerator of the fraction.

The twenty species were not present every year, in some years only seven, in others as many as fourteen nested, over eleven on the average.

Species present and nesting every year were the following: Catbird, Cardinal, Robin, Song Sparrow, Thrasher and Wren.

The number of nests made each year by all sorts of birds combined varied from 18 to 32; of which the above constant builders contributed nests each year as follows: Catbirds three to one, Cardinal always one, Robin from seventeen to five, Song Sparrow three to one, Thrasher three to one, Wren six to one. Each year there were nearly 26 nests, on the average, the Robins building an average of over ten, the Wren an average of over three, the Song Sparrow an average of more than one, and the Thrasher the same.

Besides these six with total averages of nearly twenty, the remaining small part of all the nests was contributed by the majority of birds that came frequently, or seldom, but not every year; namely by the Bluebird, Chewink, Dove, Flicker, Grackle, Meadowlark, Mockingbird, Chipping and European Sparrows, Starling, Wood Thrush, Red-eyed Vireo, and Red-headed Woodpecker. The number of nests each year is seen in the table.

Though fortunately prevented from building each year, the European Sparrow managed to steal nine nesting sites in seven years, as many as three in one year, and moreover tried to rear more than one brood in a nest, though the eggs or young were removed at times.

The tables giving the actual nesting sites on this small area bear chiefly upon the question of the possible rate of increase of common

TABLE II.

	1917	1918	1919	1920	1921	1922	1923	Average	Max.	Min.
Bluebird.....	0	0	0	0	1	1	0	2/7	1	0
Cardinal.....	1	1	1	1	1	1	1	1	1	1
Catbird.....	1	2	2	3	1	2	2	13/7	3	1
Chewink.....	0	0	1	0	0	0	0	1/7	1	0
Mourning Dove.....	1	1	1	0	1	0	1	5/7	1	0
Flicker.....	1	2	1	0	1	0	1	6/7	2	0
Purple Grackle.....	0	0	2	0	0	0	0	2/7	2	0
Meadowlark.....	1	1	1	0	0	0	0	3/7	1	0
Mockingbird.....	0	0	0	0	0	0	1	1/7	1	0
Robin.....	17	13	10	5	10	6	11	72/7	17	5
Chipping Sparrow.....	0	1	2	0	0	0	0	3/7	2	0
European Sparrow.....	1	3	3	1	1	0	0	9/7	3	0
Song Sparrow.....	3	1	2	1	1	1	2	11/7	3	1
Starling.....	0	0	1	1	0	0	1	3/7	1	0
Chimney Swift.....	0	0	0	0	0	0	1	1/7	1	0
Brown Thrasher.....	1	2	2	1	1	3	1	11/7	3	1
Wood Thrush.....	0	2	0	1	0	0	0	3/7	2	0
Red-eyed Vireo.....	0	1	0	1	0	0	1	3/7	1	0
Red-headed Woodpecker.....	0	1	0	1	0	0	0	2/7	1	0
House Wren.....	4	1	2	6	3	4	3	23/7	6	1
All nests.....	31	32	31	22	21	18	26	181/7	32	18
Different species.....	10	14	14	11	10	7	12	78/7	14	7

birds upon such areas, by enumeration of nests actually built each season.

Of course not all nests here enumerated were successful, since storms, Grackles, cats and Crows sometimes destroyed the nest or the young, but in general the tables show ample provision for the continuation of these kinds of birds and for increase in numbers if like areas should be available.

Moreover, the lists given do not include all the nests actually built, since at the end of each season the falling leaves revealed nests not previously observed and these were added to the observed nests only in cases where there was no doubt of their identity. The tables also have bearing upon the large question of the actual number of birds resident in this part of the United States.

The census taken in 1916-1920 by the U. S. Biological Survey gives results in terms of the number of pairs of birds on one hundred acres.

The data for these results were got chiefly by counting the numbers of singing birds on the areas studied. The number of birds singing should agree with the number of nests made at that season, but as some kinds may make several nests in one season, the number of all the nests to be found would be greater than the numbers of pairs of birds as found by such a census.

In our tables the number of nests found are in excess of pairs of birds chiefly in the cases of the Robin, Catbird, Wren and European Sparrow which may build repeatedly in one season. But in most cases the tables do not record successive broods when more than one brood was reared in one nest. When Wrens had successive broods in one box, only one nesting is recorded and in the European Sparrow successive broods removed from one box do not appear on the records.

Corrections may be made to the lists to make the tables more in accord with the numbers of pairs of birds in any season. Thus careful examination of the data shows that the whole number of Wren nests probably exceeded the pairs of Wrens by seven, of which three were in 1920, one in 1921, two in 1922 and one in 1923. The Catbirds also probably had successive nests in 1919 and 1920, one each, two in all. The numbers of recorded Robin nests was probably in excess of the numbers of pairs by as much as

24 to 29; three or four in 1917, six or seven in 1918, two or three in 1919, two in 1920, four in 1921, two in 1922 and five in 1923.

With these corrections the numbers of nesting birds on this area was probably as follows: 27 or 28 in 1917, 25 or 26 in 1918, 27 or 28 in 1919, 16 in 1920, 18 in 1921, 14 in 1922, 20 in 1923. This means an average of 21 pairs of birds per year on the given two and two-thirds acres, or at the rate of almost eight pairs of birds per acre. These average eight pairs of birds built 9.69 or nearly nine and three-quarters nests per year to the acre.

The Biological Survey found for 1916-20 and for 1914 and 1915 somewhat more than one pair of birds per acre on large farms of the region north of Maryland and east of the Great Plains: the whole farm of 100 acres harboring about 112 pairs of birds while the portion near the buildings supported an average of 130 pairs to the 100 acres. On farm wood lots the population might be as high as 182 pairs to the 100 acres, but in forests the data gave but 50 to the like area.

In this present article the area observed belongs not to the farm but to the suburban region of buildings and protection on which song birds are known to exist in much larger numbers. In such regions, truly Belgian densities of bird population have been recorded. In Golden Gate Park, San Francisco, over ten pairs of birds per acre were recorded. Again in the residential district, Chevy Chase, Maryland, near Washington, where birds were protected and encouraged, a little over nine pairs per acre were recorded in 1916 on 23 acres. One part of this area actually showed twenty nests in a yard one-half acre in extent, which would have been at the rate of 40 pairs to the acre, except some reduction for the fact that some of the nests may have been successive nests of one pair. Also in the midst of a town in Alabama there were recorded seven pairs per acre over 25 acres.

Whatever may be the reasons for this marked tendency of wild song birds to concentrate their nesting places about human habitations, the fact is evident that they thus establish an alliance with man which is mutually profitable. Man and birds living and feeding side by side establish a sort of commensal association, a more complex society.

Without such labor as is needed to maintain the dependent con-

dition of our domesticated animals it is easy for us to give some slight aid to wild birds, leading them to trust to man's habitations as centers of food supply, nesting sites and diminution of enemies. Ample return for this small investment of time and thought is found not so much in the help rendered to man in diminution of his insect enemies, as in the great gain of feathered associates, interesting in form and habits and often the source of pleasure through the ear as well as the eye.

Future developments of such commensal intercourse between man and bird may serve to make human life both more complex and more perfect in its ethical aspects.

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OBSERVATIONS ON THE SPOTTED SANDPIPER.

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NEXT to the Killdeer, the Spotted Sandpiper is probably the best known of all our shore birds, and in consequence a great deal has been written regarding its nesting and courtship. My own experience with this Sandpiper (*Actitis macularia*) is rather limited in so far as nesting birds are concerned, but some of the notes made are so at variance with what has been published that there seems a good excuse to record them even though they are more suggestive than conclusive. The careful observations of Dr. Loye Miller and Alden Miller are incorporated herein. Their acquaintance with nesting Spotted Sandpipers is so much greater than mine that they should properly be the writers of this paper. However, they have requested that I prepare it, and have very generously contributed their notes concerning these birds.

In the first place, there are many references to the courting antics of the male, but in reading over a goodly number of accounts which have been written about it, I fail to find a single instance in which the courting bird has been collected. It is obvious that in most cases the sex has been taken for granted. In other words, because the birds were courting, they were assumed to be males. The