The nesting of the Passenger Pigeon at Petoskey, Michigan, in 1878, is assumed usually to have been the largest that ever occurred. Professor Roney, in his paper so often cited, states regarding the above: "Here, a few miles north, was a pigeon nesting of irregular dimensions, estimated by those best qualified to judge, to be forty miles in length, by three to ten in width, probably the largest nesting that has ever existed in the United States, covering something like 100,000 acres of land, and including not less than 150,000 acres within its limits." The nesting in Wisconsin in 1871 was so much larger that one hesitates to believe the evidence. This nesting had a minimum length of 75 miles and a width of 10 to 15 miles. A conservative estimate of the area is 850 square miles. It can be stated without hesitation that Wisconsin had the largest nesting that has ever been described.

For years I have been collecting information on the history of the Passenger Pigeon in Wisconsin. The data in the formal literature were disappointingly meagre. Little progress was made until the thought occurred that any nesting or trapping of consequence should receive mention in the local papers. An examination of the files of the Wisconsin newspapers provided information that exceeded all expectations. It led to the discovery of the 1871 nesting and this paper will be limited to it.

Distribution of Nesting Areas

It was characteristic of the Passenger Pigeon to fly and nest en masse. A popular assumption is that the nestings were limited to a single or a few large areas; but this is far from the truth. Within its range the species nested over the entire area in single pairs, small groups, and colonies covering from a few hundred to thousands of acres. Frequently there were several nestings in the same region. In 1858, a beechnut year, there were three separate simultaneous nestings in Oconto County, Wisconsin, (Green Bay Advocate, June 5 and 10, 1858). There was one nesting 1.5 miles wide by 7 miles long on the Peshtigo river; a second on the Oconto river.

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recovered as larger than the first; and a third, covering two square miles on the same stream. In certain favored sections the Pigeons nested annually in variable numbers, while in others nestings were erratic. Huge nesting areas were the exception. Wilson mentions one south of Danville, Kentucky, in 1810, that was 3 miles wide by 40 miles long. In 1843 (?) there was a nesting on the left bank of the Mississippi extending down the river from LaCrosse, Wisconsin, "the whole length of the roost being about forty-five miles."

The food supply was a natural control on the size of the nestings and their distribution. The breeding areas were usually in long lines. The reason for this offers a fertile field for speculation. Presumably this form facilitated arrival and departure from the nesting. The cruising range is stated to have been 50 to 100 miles daily. A simple mathematical calculation will show that a line does not afford the maximum accessible food area. Assuming a cruising range of 50 miles for a nesting covering 120 square miles, it is found that the radius of a circular nesting would be about 6.3 miles. The feeding area available 50 miles from this circle would be over twice that afforded on the sides of a parallelogram 40 miles long by 3 miles wide.

In order to illustrate the distribution of the nestings during the period under discussion, a few examples will be given. In certain years no large nestings appear to have occurred due to lack of mast.

1864

Minnesota — Nesting at St. Charles.
Wisconsin — Large nesting in the Kickapoo woods south of Leon.
Michigan — Large nesting between South Haven and St. Joseph.

1865

Canada — Large nesting at Angus Station, Georgian Bay, Ontario.
Wisconsin — Nestings at Afton, Brandon and Appleton destroyed by snowstorm.
Minnesota — Nesting in the Chatfield timber near Rochester.
Michigan — Large nesting at Marquette, upper Peninsula.
1866

Pennsylvania — Nestings in Potter County and at Vilgeh, Elk County.

Michigan — Nestings at Grand Haven on Lake Michigan; Forestville, Sanilac County; Torn of Vassar, Tuscola County; and Van Buren County, where no nesting had occurred for fifteen years.

Indiana — Large nesting at Martinsville, Morgan County.

1867

Nestings in Ohio, Minnesota, and Wisconsin were broken up by shooting and deep snow.

1868

Michigan — Large nesting at Manistee, Manistee County.

Pennsylvania — Nestings in Northwestern counties.

1869

Wisconsin — Comparatively small nesting in the Richland timber, southeast of Monroe in Green County; a large nesting south of Sturte, and a nesting in Oakfield, Fond du Lac County, broken up by farmers.

Michigan — Nesting at Mt. Pleasant, Isabella County. There were also nestings in Indiana and Canada.

1870

Canada — Nesting at Goderich, Ontario.

Pennsylvania — Nestings in McKean and Potter counties reported to be the largest since 1850.

Michigan — Nestings at Glen Haven and Cheboygan.

1871

Wisconsin — Large nesting in south central portion of state.

1872

New York — Nesting in the southern end of Ulster County.

Michigan — Large nesting at South Haven, Van Buren County; and another at Glen Lake.

Wisconsin — Nesting three miles long near Shawano, Shawano County; and a large nesting in Brussels Township, Door County.

1873

Wisconsin — Small nesting in Springfield Township, Marquette County.

Minnesota — Nesting four miles long northwest of Rochester in Olmsted County.
THE PASSENGER PIGEON

One dealer has stated that he followed the main body through Michigan, Wisconsin, Iowa, and Minnesota and that there was no large nesting owing to the scarcity of mast; and that he later learned that there was a small nesting in the western part of Minnesota, a small one in New York and one in Michigan. Another dealer confirms this: "In 1873 we did baiting in Ohio and Wisconsin but located no nesting."

Distribution of Nesting Areas

In studying the nesting of 1871 I have attempted to get definite information on the following points:
1) The flight ways and movements northward.
2) The area covered and its outline.
3) An estimate of the number of birds nesting.
4) The number of birds killed by trappers and sportsmen.
5) The food consumed.
6) The number of eggs or squabs in the nest.
7) Was there a second nesting?
8) Where did the pigeons go after the nesting?

The Flight Ways and Movements Northward

The Pigeons appear to have migrated into Wisconsin over the western two-thirds of the state. The Mississippi and Rock River valleys, especially the latter, were two main funnels by which the birds poured into the nesting area. The main column passed through Beloit, Monroe, Janesville, Staughton, Madison, Jefferson, Watertown, Baraboo and Kilbourn. The Mississippi column passed over La Crosse swinging northeast to Black River Falls, Scarta and Tomah.

The Beloit Journal of March 16, mentions that pigeons were flying north in large numbers, while on the 23rd extensive preparations were being made for trapping in the vicinity. At the same time pigeon hunters were out in force at Monroe. The Janesville Gazette of March 9 states that pigeons are flying northward; on the 15th large flocks are mentioned, while on the 20th it is said: "Trapping pigeons is a profitable vocation to many of our farmers." On the 28th pigeons are mentioned at Lake Koshkonong so that the flight continued over a period of at least three weeks. On March 11, the Madison Democrat stated that "pigeons fly every morning in thousands."
The Jefferson Banner of March 15 states that "pigeons were flying quite lively last week." On the same date the Watertown Republican informs us that "Myriads of wild pigeons...put in an appearance in this vicinity last week." They are mentioned at Columbus for March 6 and 22, and at Lodi on March 22. The Baraboo Republic states on March 8 that "large flocks of pigeons have been seen passing over the village for the last day or two." We now approach the concentration point. The editor of the Kilbourn Mirror was apparently not impressed by the early flights for pigeons are not mentioned until April 22. The day previous the entire village seems to have turned out for a pigeon hunt, and it was estimated that 2,000 were killed and 1,500 brought into town. Numbers finally made an impression for the May 6 issue reads: "...it seems unaccountable where they all come from...For the past three weeks they have been flying in countless flocks which no man could number. On Saturday, April 22, for about two hours before nightfall, they flew in one continuous flock from south to north, darkening the air and astonishing the people by the sound of their wings and could be seen for miles in extent. And they have still continued to come, although not in so great numbers."

Snowstorms caused an ebb and flow. There was one in Adams County as late as April 10, at which time the pigeons were reported to be nesting. At Columbus on March 8, the birds were flying southward. They appeared at Fond du Lac on March 11, and on April 8 we read: "The flocks without any kind of either-way succeed each other in rapid succession." Pigeons appeared at Wautoma March 2, several days prior to mention of their presence in the southern part of the state. The Appleton Crescent on April 1, states: "Wild pigeons are hurring northward." They were reported as far north as Shawano on April 6. There was no nesting in the northern part of the state so far as I have been able to determine. All the birds that made an earlyappearance in the Lake Winnebago region appear to have wheeled about eventually, to nest in Adams County.

In the region of the Mississippi Valley, pigeons appeared at La Crosse on March 7, and on March 9, they "darken the vernal atmosphere". By the 17th they were at Hudson. The flight does not appear to have extended inland to any great extent. The Viroqua Censor states on March 15th that wild pigeons have made their appearance
though they are not very plentiful as yet. That the main western flight followed the river rather closely is supported by the statement of Leffingwell that "they annually flew up the Valley of the Mississippi following the river in its windings."

The southwestern portion of the state had a flight or lucing comment except at Platteville where on March 9 numerous flocks were stated to have appeared. Most of the papers do not mention them at all. Pigeons appeared at Mineral Point, March 15, but are not mentioned again. At Darlington, they are reported on March 15, but only in connection with a hunting accident. On the other hand, the flight of 1873 is noted.

Lack of editorial comment is not conclusive evidence of the absence of pigeons as well be observed from the papers within and on the edge of the nesting area. The Friendship Adams County Press does not comment until April 8 when "Clouds of pigeons fill the air" and damage to crops is feared. The editor of the Mauston Star is finally moved to mention pigeons on April 30 after receiving a "fine lot" for a pigeon is. The new Lisbon Argus is more observing. On March 16 it states: "During the early part of this week immense flocks of wild pigeons were wending their way north, and they still continue to come." This is further proof that most of the pigeons came via Kilbourn and the Rock River valley. At Sparta, pigeons are not mentioned until April 11. On the 18th there are "immense numbers." The birds arrived at Black River Falls, March 11, and by April 8 there were thousands.

Not one reference was found to pigeons moving along Lake Michigan. The editor at Sturgeon Bay commented on April 6: "No pigeons have made their appearance here this spring." This statement is important for the reason that in a year when the pigeons nested in Michigan, part of them frequently followed the shores of Green Bay. From this point they entered Michigan by way of the Upper Peninsula or crossed Lake Michigan over the Manitou Islands.

The Area Covered and Its Outline

It is not possible to outline the nesting area with satisfactory accuracy. There are ample independent observations as to its length, however. John Juir quotes Chief Pokagon as follows: "I saw one nesting-place in Wisconsin one hundred miles long and from three to ten miles wide." Mershon quotes from a letter received from
Mr. Henry T. Phillips, the Detroit game dealer: "In Wisconsin I have seen a continual nesting for 100 miles, with from one to possibly fifty nests on every oak scrub." In neither case is there any indication as to date or location. It is safe to assume that they refer to the 1871 nesting, since I have been unable to discover any other nesting since 1850 that approached it in magnitude. In a letter dated December 17, 1896, Pokagon, without reference to size, mentions visiting a nesting "north of Kilbourn City Wisconsin, about twenty-five years ago," making the date exactly 1871.

The local editors appear to have known little about the vast pigeon roost outside of their own bailiwick. The best information comes from visitors outside of the area. General Henry Hamden visited the section north of Kilbourn and spent several days on the breeding ground. He states that the roost commenced five miles from Kilbourn, was eight to ten miles wide, and extended as far north as Grand Rapids in Portage County, a distance of forty or forty-five miles. The editor of the Kilbourn Mirror, under date of April 22, states that the nesting begins about six miles from the village. According to travelers and farmers, the nesting was "three miles wide and fifty miles in extent north."

There is a good description of the roost by Hugh Kelley published in the Baraboo Republic for May 3. Abandoned nests were found, on leaving Kilbourn, as soon as his party struck timber. They went ten miles and pitched their tent where the pigeons were "thick as locusts." As a matter of fact, nearly all of the timbered portions of Adams County seem to have been occupied by pigeons to some extent. In the northern part of the county the nesting extended entirely across it, a distance of 25 miles. The editor at Friendship, April 15, states: "The pigeons are nesting three or four miles north of this place. The nesting ground extends for miles in the towns of Strong's Prairie, Monroe, Preston, Big Flats, and Leola. Flocks containing tens of thousands of the birds are continually flying over, while the woods are literally alive with them." This shows that the nesting extended to the tip of Adams County, if not as far as Grand Rapids. Unfortunately, a paper from the latter town is not available. It is entirely probable that the nesting did extend nearly to Grand Rapids for the Plover Times of May 13 states: Several loads of young pigeons passed.
through our village this week. They were captured below Grand Rapids, where the pigeons have nested and hatched."

It would be conservative to take a length of 50 miles and an average width of 8 miles, or 400 square miles for the nesting east of the Wisconsin River. I have found no evidence that the nesting extended into Waushara and Marquette County, though the northwestern corner of Marquette County, as well as Adams County, was considered favored nesting ground. The Waushara Argus, of Waunakee, on April 27 states: "These birds are very numerous in this part of the State. It is said that they are nesting west of Flyte's Mills in Adams County."

Mr. Hugh Kelly in the article above cited says: "This roost extends from Kilbourn to Black River Falls, and varies in width from ten to fifteen miles. Inside this tract as far as I have been, not a single tree has been slighted by the nest builders." He is not alone in this statement. There is a long article in the Fond du Lac Commonwealth of May 20, in which the writer states that his party "headed for the great pigeon roost, stretching from Kilbourn City to the Wisconsin River, for scores of miles beyond." The Portage Register of May 6 published a short article on the "Pigeon Trade." The information was obtained from agents of the American Merchants' Union Express, who should have been well informed of the extent of the nesting. It states: Few persons have any adequate idea of the extent of the pigeon trade carried on at points on the La Crosse road west of here. The country from Kilbourn City to Sparta and as far north as Grand Rapids has been taken possession of by the pigeons, and converted into one grand roost, from which the birds radiate."

On April 18, the Sparta Herald states: "There is said to be a pigeon roost on Silver Creek, from which large numbers are taken"; on April 25: "These birds are a prominent topic of conversation...in Sparta and vicinity. They are nesting in immense numbers in the woods, extending from the Kickapoo far up into Jackson County, and covering a territory many miles in extent eastward. They can be reached by a drive of six to eight miles from Sparta, in a northeasterly direction." The Black River Falls Banner (April 29) extends the roost by announcing: "From J. E. Melrose, we learn that the timber land between this place and Big Creek is literally alive with pigeons from three to seven miles in extent in every direction." Whether the nest-
THE GREAT WISCONSIN PASSSENGER PIGEON NESTING OF 1871

ing extended as far as Augusta is not known satisfactorily. From Kilbourn to the known western extremity of the nesting is approximately 75 miles; if the nesting extended to Augusta the length was 100 miles, in agreement with the statements of Phillips and Chief Pokagon. There are other reasons for believing that the nesting extended to Augusta, though Mr. A. R. McKnight of this city informed me recently that they never nested there. Marshon has a letter from Mr. E. Osborn to H. T. Phillips in which Osborn states: "In 1871 we located a large body at Tomah, Wisconsin, and did some heavy shipping...We also shipped from Augusta, Wisconsin, express, $13.50 per barrel. A nesting at Eau Claire, but we could not get to do much with them there." In another letter Osborn says of large catches by netting: "At August., Wisconsin, in 1871, Charles Curtin, then of Indiana, over one hundred dozen; William W. Cone of Masonville, N. Y., Samuel Schook of Circleville, Ohio, and some other boys, 100 dozen and over."

At this period trapping was usually done close to the nesting. The evidence is not conclusive, however, that there was a nesting. The Adams County birds fed extensively to the eastward and there was much trapping by baiting in Kaukaha and Marquette Counties.

Taking the nesting west of the Wisconsin River as 75 miles long and averaging 6 miles wide, we have 450 square miles. Adding to this the 400 square miles in Adams County, we have a continuous "roost" of 850 square miles.

(Continued on page 13)

SOME GROUSE RECORDS

During the past grouse season Roy Hamblin, of Hayward, shot a Spruce Grouse by accident, believing it was a Ruffed Grouse. The bird was killed about 20 miles east of Hayward and is now mounted in the Conservation Department's Museum at Poynette. Hamblin located four more birds recently.

Unusual as Ruffed Grouse are in Jefferson County, one came to Elenville and walked into the garage there. The bird was captured and sent to the State Experimental Game and Fur Farm at Poynette, where research in the feeding and possible propagation of native grouse is being carried on.