commence housekeeping. Our mattress was easily cut from the trees, and supper was appreciated more than at home. Late in the evening we enjoyed another boat ride on the now rather ruffled waters of the "lake of the falling leaves."

The rosy tints of Friday morning's dawn found us breakfasting, for at 7 o'clock the hotel team was to convey our bundles to the station. That attended to, we resume seats once more in the skiff and ferry over to the Point, a distance of about three miles. Were it not for the liaison of that wretched cur, we might now go out with that elegant steamer pufflug past us, to the other end of Gogebic, fifteen miles north. Leisurely gliding along the cool waters, one cannot but admire Gogebic's rare loveliness. Rocky shores, wood clad hills, secluded nooks, forests of gigantic evergreens, radiant sunshine, and glittering waves invite to dreamy languor, out of which a sudden pull at the lie rouses us. (Richt here would be a chance to speak of an almighty big haul, but I'm just like the father of my country: I cannot tell a lie. That black bass weighed perhaps a pound and that's all.) After an instructive ramble about the woods at the Point, time was up, and the landing oured for. We bade a reluctant good-bye to Gogebic.

At the depot waited our poodle, willing to be forgiven and wagging a joyous welcome. All united, the snorting steam horse hurried us down to the far-famed Eagle Waters. After securing a convenient, serviceable flat-bottomed at a very reasonable price, how did we value it, that there was no necessity for carrying our traps, that we could simply aly them down in the boat while lazily cruising up the quiet Eagle River. The first lake was Yellow Birch. Excellent The second, Duck. Exquisite! The bird, Otter. Exceedingly romantic! The fourth, White Eagle. Ex—well, its attractions induced us to stay. Our attention was directed to a bold eminence stretching along the eastern bank, and, as the receding light to flay urqued a prompt decision, our boat was directed there also. A few sq

we measured, nammered, pounded—within an nour we were sheltered. Well, the exultation. Even old Sol squinted from behind the clouds again. A hearty dinner dispelled the remainder of uneasiness.

Then our sylvan residence was furnished in princely style. A floor was laid, the roof was improved, nails were driven whereon to hang pans, tin cups, pails, clothes pouches, guns; colossal armfuls of browse were hewn and drawn to camp. In short, nothing was left to wish for. We could afford it.

The rest of the cloudless afternoon was spent in courting a huge fire. One piece of raiment after the other was impartially stripped off and dried. Were I afflicted with an irreverent, humorous vein, how should I now chucklingly narrate about Mr. B.'s singed pants or scorched rubber coat; but charity forbids and I'll forbear.

Toward evening several wall-eyed pike were hooked in the waveless, pine-encircled Scattering Rice. We had not often disentangled our line from the over-affectionate pond lilies though, before we heard the dwarfish steamboat Eagle whistle behind us and visitors alighted in the neighborhood. Shortly after a skiff, containing two anglers, floated into the S. R. Interchanging the news of the day with them, fishing was recommenced. Birch-bark canoes on different parts of the lake showed that these waters were also frequented by the noble redskin. One of these sons of the forest I accosted. He went up the Deer Skin Creek that night to kill a deer. On White Eagle, not far from our abode, the steamer anchored, and its occupants, four ladies and two gentlemen, awakened the slumbering echoes of forest, hill and dale, with chatting, singing, shouting, screaming and yelling.

The next morning, ere Phebus's golden chariot wheeled into sight, I feverishly pursued the causes of a tickling sensation, of which I had zealously but vaiuly struggled to rid myself since the stars had begun to fade. They relished me extremely, the frisky darlings. They and their scientific name escaped mc, but an Indian once described them as "

'no-see'ems." They are hateful, detestable, voracious—but why portray them!

I went hunting. Discovered a lonely, sinuous, undulating road, from which I could occasionally, where the dense leafy screen permitted, gaze down the steep banks upon the river. Leaning on my trusty breechloader, the faithful dog at my side, the mists that hovered over the pebbly shores sluggishly departing, as the rising sun cast brightness and warmth over the world; the gentle morning wind breathing through the verdant curtains of the white birch; youder, part of Otter Lake's glassy surface shimmering across; afar off, the hoarse notes of the wary loon; around me solitude and screnity. This was the picture on that morning. It will forever form one of the pleasant reminescences of the Eagle Waters. I tried to sketch, but it could not be done; the no-see-'ems were too fiendish. I jumped to my feet and wandered on.

When I arrived at home, Mr. B. returned from Deer Skin Creek with one fish. We put it under the planks, breakfasted hastily, and set out trolling. Doubling a certain point we came upon an Indian camp of six tepees. The

bucks sat and smoked, one of the squaws cleaned venison, some pappooses amused themselves with a dog, and on a scaffold was strained a deer skin. Here I actually caught an Indian washing himself. Further on we surprised some woodducks that dallied on a log perfecting their toilet. At our salute they dropped a courtesy till below the water, and are probably still smiling at our impetuosity. Returning after noon with some pike, we were entertained by one of the campers from yesterday. When preparing dinner we looked for the bass. It had disappeared. My colleague suspected the spaniel, but, having educated that dog myself, I was certain that he wouldn't touch a fish unless it were "well done." His innocence shortly afterward emerged from the pile of lumber in shape of a black mink. I rubbed the pilfering little bandit's skin with salt and delight, and he now adorns my school room in a glass case with tobacco in him, till the moths get him. That's Hector's curse.

Toward eventide we were out on another piscatorial excursion and lugged homeward three handsome pickerel. One of them I estimated at eight pounds to please Mr. B., who caught it. (Between the reader and myself, it was a six-pounder). After a delectable repast of tea, corn-cake and pickerel, reclining on the bed of leaves, yarns are exchanged. This, after a while, ceases. You stare reflectively on the fantastic pictures, traced in grotsque designs on the pile of wood that the greedy element consumes, the eye follows idly the weird shadows dancing on the sombre background while bucks sat and smoked, one of the squaws cleaned venison,

ground while

"Viewless hands the æolian organ play,

"Viewless hands the æolian organ play,"
the scintillating Orion leads to reveries of gas-lighted streets,
peace and good will toward all rule the heart; the musing
thoughts wander from the melodious lullaby of the waves,
splashing against the boat and the stones at the landing, to the music and din of city life; before your mental

arises home, daybreak the chit of the red squirrels and the lance there arises home.

At daybreak the chit of the red squirrels and the lances of the no-see-'ems aroused me. The spaniel flushed partridges twice, while I sauntered along the forest-hidden path, but—they can fly fast, can't they?—but when a third time he treed three more, up to which he looked with great expectations, while they inquisitively peeped down, probably wondering at the nervous excitement of his tail, I satisfied his wish and their curiosity with neatness and dispatch. Toward evening we started for Cranberry Lake. We had read so many glowing accounts of hunting the deer, where these beauties coyly step down to the pellucid shallows to bathe their lithe forms and to nibble of the water lillies, that we made up our minds to secure a look at them. Let nobody be shocked at the idea of a deer hunt out of season. There is no cause for alarm. What is virtue without temptation? We were not tempted. Those deer probably never read those accounts or else must have mi-sed up, we started for White Eagle and reached our hearth at 11 P. M.

While at supper Hector occasioned a noise in the bushes and presently swept down the declivity chasing a muskrat of enormous siz. As we could not fire during the scramble, for fear of hitting the dog, he had an ugly job of it. Before he was through with her he had quite a lacerated lip himself. We finished our meal, which had turned cold, and soon there reigned at the dying embers the silence of a well-merited repose.

Tuesday, at sunrise, we noticed quite a number of fresh

merited repose

merited repose.

Tuesday, at sunrise, we noticed quite a number of fresh deer tracks, beginning not thirty rods from camp and continuing for miles along the road. With a rabbit and a ravenous appetite we wended our way toward onr hut. While resting at the wooded slope, with a grand view of White Eagle and Otter, there passed up the thoroughfare a birch bark, the individuals in which did not perceive us. Two indian women paddled, while their lords sedulously practiced dolce far niente, and, judging from their laughter, related some good ones.

ticed dolce far niente, and, judging from their laughter, related some good ones.

Conformably to previous arrangement we were to leave to day. Our hotel was broken up, and the boards were returned. My blanket, care-worn and aged, was suspended to a tree. It has presumably been adopted by the Injuns, and this winter, perhaps, serves another term in the wigwam of the Chippewa. Sic transit gloria mundi. says the Latinist. The capricious White Eagle, the magnificent Otter, the curling expanse of Duck, the attractive Yellow Birch, they were all once more piowed by our keel, and Eagle River station was reached hale and hearty, just in time for the M L. S. that, on wings of steam, brought us back. 798-11.

## Hatural Distory.

## THE SPARROW HAWK.

I shall have to kill two birds with one stone; all the "scientific fellers" are about to get after me, I perceive. I have discussed the sparrow hawk as I observed him in Maryland, Virginia and Louisiana, and I have found his habits to be the same in all those places. I have never seen any difference in the numbers observed at different seasons in either of those States to warrant the conclusion that there is a general migration of the species in the Atlantic coast States southward in winter.

I suspect that I have spent as many days abroad in the field in pursuit of fish and game as any man of forty-seven

southward in winter.

I suspect that I have spent as many days abroad in the field in pursuit of fish and game as any man of forty-seven years of age in these parts. Moreover, I did for years a very large medical practice in Piedmont, Virginia, which kept me in the saddle some part of every day in the year, many times all day, often carrying dog and gun for a shoot going and coming. In reply to Mr. Henshaw's doubt, therefore, as to the sparrow hawk wintering here long before the advent of the sparrow hawk wintering here long before the advent of the sparrow hawk wintering here long before the advent of the sparrow hawk wintering here long before the advent of the sparrow hawk is anot always been a winter resident hereabouts. He asks what evidence I have of it, I reply, my own eyes.

I still adhere to my own opinion that the sparrow hawk feeds in the States named above largely, and well night experience, never seen in my lifetime ten small birds in no specimen ever examined by me, and I have examined not a few. I remain of opinion, notwithstanding what Mr. Henshaw thinks, that the sparrow hawk is now and has been since I was a small boy, a common, and not a rare, winter resident here. I am of opinion that the great majority of sparrow hawks do not leave here for the South in winter, as Mr. Henshaw thinks, The sparrow hawk in the grasshopper cursed regions of the West may feed chiefly or almost exclusively

on grasshoppers in grasshopper season and when the snow falls may go to the South, but such beyond question is not the case here.

on grasshoppers in grasshopper season and when the snow falls may go to the South, but such beyond question is not the case here.

I beg Mr. Henshaw to understand me correctly as to the utility of the destruction of grasshoppers. The point I make is that of the thousands of millions of them in a given locality, the few that sparrow hawks destroy neither amounts nor can amount to a perceptible check upon them. To speak of the number of grasshoppers destroyed by a sparrow hawk as "simply incalculable," is to put it in a manner "I do not understand," not being a "seientific feller" accustomed to the precise language of science. If the fishculturists can tell in a minute how many hundred thousand fry are in a pail of water, an ornithologist ought to be able to "calculate" how many grasshoppers a sparrow hawk will hold and how often his contents change in twenty-four hours.

There is no one fact in natural history more apparent to me than that the habits of species vary very widely in different and even in neighboring localities, nor has sufficient importance been attached to this fact by professional scientists. Due attention to this fact would save us outside barbarians the mortification of many an exhibit of ourselves.

Let me say to Mr. Henry Litelfieid West that upon his authority I accept the 18th day of March, 1883, as "a warm sunny day in January and February" when brown old grasshoppers" were abroad, if "Acridium alustaceum in a lively condition," be a "brown old grasshopper," and this I call one grasshopper day between Dec. 1 and Jan. 1, when an "enterprising" sparrow hawk may have had "brown old grasshoppers" for dessert. Next! M. G. Ellzery, M.D. Washington, D. C.

## THE DISTRIBUTION OF SPECIES.

BY DR. R. E. C. STEARNS.

[Read before the American Fisheries Society.]

RY DR. R. E. C. STEARNS.

[Read before the American Fisheries Society.]

THE geographical distribution of species is one of the most inviting fields which nature offers to the student. Once entered upon, every path is found to lead to new and attractive vistas, and to point the way to curious and interesting phenomena. At every step we receive delightful impressions, and from every side hints and suggestions as to nature's methods.

Through the establishment of the United States Fish Commission and of Fish Commissions in many of the States, as well as by the organization of food fishes has become an important protective resource, and the economic aspect of ichthyology has been made familiar to a great number of persons. Incidentally, too, but to a smaller extent, the scientific side has attracted increased attention from a class of persons who would not have become interested in the biological aspect if the latter had been presented to them first. With the selection of species for propagation and distribution, there naturally followed the investigation as to the habits, habitat, etc., of each selected species; and one inquiry led to another, for in order to insure success from the busness standpoint, it is necessary to pursue as closely as possible the various steps, and follow the various methods and order that nature follows. So a knowledge of the character or peculiarities of the environment or native haunts of the selected species has to be obtained.

Preceding the distribution and planting of the young fish, occurs the inquiry and consideration of the factors or physical character of the region in which it is proposed to make a plant and so on. In this way much special and abstract knowledge is accumulated and brought to public attention, and more general notice; the laws of life are better understood, and the relation of species to species, and of all life to its environment, is made more clearly perceptible and more widely known. It will be seen by the foregoing that lish propagating operations and enter

intentional, accidental, or more properly incidental distribution, and see what or where it leads to.

The transplantation of animal and vegetable species from their native haunts to some other part of the earth, more or less distant from their indigenous habitat, as an incident of traffic or commercial intercourse and enterprise, has many peculiar and striking illustrations. We have a notable example in the geographical distribution of the common rat. With the extension of commercial intercourse and international trade, the brown rat or as it is often called the Norway rat, as a species, became more and more cosmopolitan. At the beginning of the last century this rat, a native of India, made its appearance in Europe, having stolen a passage on the ships engaged in the India trade.

It first appeared in England in 1730, and twenty years later it had reached France. In Europe it drove out the black rat which appeared in that continent during the middle ages; the black rat coming from no one knew where, having previously driven out the native mouse which was the only representative of the family known to the ancients. At the present time the brown rat is everywhere, pretty much; on the main lands of the globe and the islands of all seas, wherever commerce sends its ships. So too with the cockroaches (Blatta orientalis), a very cosmopolitan and very disagreeable form of insect life. These two familiar species are exceedingly active animals, and make their way on board of vessels or hide in packages of merchandise, and are thus carried on board of ships or cars, their inconspicuous size enabling them to steal a passage.

Again we have other illustrations of unintentional distribution by man, where the trees, plants or seeds of one region are sent to another. Upon the trees and plants thus transported there often occur forms like the scale bark lice, Aspidlous and Lecanium; also the eggs of various insects. Many seeds contain the grub, maggot or larvo of insect forms. If the roots of the trees or plants are protecte

bighly probable that the scale bark lice, Aspidiotus aurantia (red scale) and Lecanium olos (black scale), now such great pests to the orange growers of California, found their way into the Citrus orchards of that State directly or indirectly cross, imported and plated for some or more controlled the control of the control of the citrus orchards of that State directly or indirectly rece, imported and plated for some or more controlled and plated for the controlled and plated for controlled and advanced to the controlled and advanced for the controlled for the controlled for controlled for the contro

As proof of the previous non-occurrence of Mya arenaria on the West coast; it may be well to state that the shore from Cape St. Lucas northerly has been explored by many

competent naturalists at various times, extending back to nearly the beginning of the present century. Since the American occupation of California, commencing with 1849, several intelligent collectors have resided there, and others have visited the coast. It would have been impossible for so familiar a form, inhabiting, too, the easily accessible littoral zone, to have escaped detection; and corroborative of the above, we have the further evidence of the kitchen-middens or shell heaps of the aborigines, many of which have been examined by me without detecting any sign of this easily recognized species.

WASHINGTON, D. C.

THE BIRDS OF MICHIGAN.

BY DR. MORRIS GIBBS.

 $(Continued\ from\ page\ 336,\ Vol.\ XXV.)$ 

Siurus nævius (Bodd.) Coues. Small-billed water

ob. Survus nævus (Bodd.) Coues. Small-billed water thrush.

I have never found this species common in sections where I collected, but it is not rare during migrations in some quarters. Mr. Trombley, of Monroe county, writes me that the birds are abundant in that extreme southern portion of the State during migration, but asserts that he has failed to find one by the most vigorous searching during the summer months. Unlike the large-billed thrush which is a very common species in all suitable localities, the small-bill is unevenly distributed and but little known by the average collector. Only a few ornithologists in our State have identified this species and the next, and studied them separately, and therefore reliable information from some sections is wanting. The majority of the collectors of my acquaintance, when laboring under the delusion that only a single species is found with us, have continued to record the water thrush of their acquaintance as the small-bill species, and several instances have reached me in which the much more abundant large-bill is called the small-bill. The large bill is not recorded.

Sager, 1889, in his list of the birds of Michigan, which

instances have reached me in which the much more abundant large-bill is called the small-bill. The large bill is not recorded.

Sager, 1839, in his list of the birds of Michigan, which was the first published and may be found in the Geological Survey of the State, records the small-bill and omits the largebill. Hughes omits both species and thereby at least avoids possible error. Dr. Miles, in the Geological Report, 1860, embraces this species and the next. Dr. Fox, who published a list, I believe about 1853, and whose original manuscript I have had the pleasure of scanning, embraces the small-bill and omits the other. Boles, in his list of Birds of Southern Michigan, 1875, embraces this bird and says, "summer resident; breeds." His list is based entirely, I understand. on notes taken in our southern counties, and as he omits the large-bill, which is a very common summer resident in all of our southern counties, I judge that he has confounded the two species, for as yet there is not an authentic instance of the capture of a nest of this species in the State. Covert, in 1873, in the Birds of the Lower Peninsula says "rather common; breeds." In 1881, in his list of the birds of Washtenaw county, he modifies his observations to. "Not a common summer resident; breeds," which would indicate that he did not find the species as common in that county as in other parts of the State. Many collectors have recorded the largebill as the small-bill. One instance, which is certainly surprising, is worth mentioning as proof of an error which is often the result of incomplete analysis. It is, however, not strange that when only a single species is known it should be mistaken when identified by book alone, when we consider that many of the older writers were sorely puzzled by the water thrushes, and that Audubon finally, after often comparing them, confounded these two of the Siuri and left them as but one species in his work. The case in question occurred a few scasons back, when a reliable observer offered me notes on some of

the wrong species for a quarter of a century. Since then he has made every effort to find the small-bill, but to no purpose.

The small-bill is a rather rare species and but little known. I first met with it May 13, 1875, in Kalamazoo county. Since that time it has never been taken in our county, although I found it not rare during the past May in Van Buren county, twelve miles wost. On May 16, 1883, I first became acquainted with its song, which was a very agreeable surprise to me from its extreme dissimilarity to those of the other members of the genus. I do not think that Audubon or any of the observers who have confounded the two species would have fallen into so ridiculous an error if they had listened to the songs of the two water thrushes. The notes of the small-bill in no way resemble those of the large-bill, either in tone, continuance or accent, and once heard cannot be confounded with either of the others of the genus. The common song is a bright, animated chatter, and may be expressed by the notes Othet, chet, chet, chet, epter, eleter, neter-ner. Starting in brisk and loud, it ends somewhat lower in a regular chatter, which may be heard several hundred yards distant, if the woods are not too noisy. I picked out my first one from its peculiar notes, among a forest full of jubilant singers, when I was quite two hundred yards away, and followed it through mire holes and over slippery logs for a long time before bringing it to the ground. Again the notes are Chink, chink, chink, chink, chink, chero werra-chanker, or again, Kee-che-chow-chweedelee or Pee-chow-cheedede. The birds while singing—in fact at all times, so far as my experience goes—are extremely shy, and I have found it difficult to secure specimens. As a rule, while singing they perch high up in trees, and I have taken them from the tops of tall leafless trees in spring. Occasionally observed on the ground or skipping about among the stumps, trunks of fallen trees and pools of surface water, similar to the large-bill, but usually they select mistake.

59. Siurus motacilla (Vieill.) Coues. — Large billed water thrush,

thrush.

Abundant during about four months of the year. Undoubtedly our earliest arrival of the birds of this family, although the yellow-rump is generally credited with being first with us. The large-bill often arrives by April 12, and is frequently abundant by the 20th. The birds are musical

on their arrival or soon after, and by May 1 the woods in sections frequented by them are filled with their queer jing-ling melody. This is quite a well-distributed species, but is confined to certain sections from the nature of its habits. It is often unknown by amateur local collectors, whose field of trips are confined to uplands and high oak woods, while it may be very common in some swale within a radius of two miles of our collectors' grounds. It is not only not found on high and dry land during the regular season, but even during migrations it is unusual to take a specimen in elevated sections. It, however, must traverse many parts of the country where there is no low land, rivers or ponds, and as an instance, I would mention the capture of a specimen in a store in the city during April, it undoubtedly having found its way there during its night travels.

The large-bill is very much more abundant than the small-

store in the city during April, it undoubtedly having found its way there during its night travels.

The large-bill is very much more abundant than the smallbill, and is found much more evenly distributed. It is embraced by the lists of Dr. Miles, 1860, C. W. Gunn. B. F. Syke, A. B. Covert, Trombley, Dr. Atkins and others. Not given by Steere in his first list, but embraced in his second list, viz., "Migration of Michigan Birds, 1880." Not given by Sager, 1830; Cabot, "Birds of the Northern Peninsula," or Boies. Many have made a mistake regarding the identity of this species, and the last as above mentioned.

The first arrivals appear some seasons by April 5, and by the 15th of the month they are usually quite common. I have seen the old birds carrying nesting material as early as May 12, but have never myself found a nest. Mr. Chapin tound a nest in Kalamazoo county near the river on May 24, containing one egg and one of the cowbird. Mr. Trombley, of Monroe county, says that the nests are well concealed and very difficult to find, and are usually near a pool of water or stream. One which he found May 13, 1879, contained four eggs slightly incubated, and two eggs of Molothrus. The nest was built into the side of a decayed log, a sort of roof being formed by a portion of the wood covering the nest, which effectually protected it from the weather as well as concealing it from view. It was composed of dead leaves which formed the base, next stems of weeds, black rootlets, shreds of moss and fibrous roots of plants composed the sides and rim. The lining was of coarse grass and fine stems of plants. It was five inches outside by three inches inside diameter, and three inches depth outside by one and three quarters inside.

To a certain extent the notes of the two water thrushes

which formed the bisse, next stems of weeds, black rootlets, shreds of moss and fibrous roots of plants composed the sides and rim. The lining was of coarse grass and fine stems of plants. It was five inches depth outside by one and three-quarters inside.

To a certain extent the notes of the two water thrush, and his best notes are something like the inspired notes of the oven bird when, rarely, he exhibits his greatest powers. If one visits the little overflowed spots in the forest during spring, he will not fall to hear the wild, sweet, expressive song, which possesses a charm which the melodies of few birds surpass. The song is evidently uttered in an easy off-hand manner, unlike that of the golden-crowned thrush, who stops in his walk to chatter his simple notes, and is delivered as he skips about the pools and over the logs and dead leaves, while he actively gleans his food and wags his tail. To visit the large-bill, or in fact, to spy about the haunts of any of the Starri without their knowledge, is not an easy matter, and it is only occasionally that one has the gratification of beholding them in their freedom about their nesting sites. It is a pretty sight to witness the peculiar movements of the wag-tails, as they move about in the recessor of the wag-tails, as they move about in the recessor of the wag-tails, as they move about in the recessor of the wag-tails into the niches of logs and stumped oping one. The large and active and suspicious in their holds, but he large and la active and suspicious in their holds, but he large and la cative and suspicious in their holds, but he large and la cative and suspicious in their holds, but he large and la cative and suspicious in their holds, but he seems of the recessor of the work of the large the large that the large has a company of the seems of the content of th