

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 puffing 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 line rouses us. (Right 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 oared 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 lay 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 third, 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 of day urged a prompt decision, our boat was directed there also. A few squirrels were shot, dressed and hid, and before the nocturnal shades had enveloped us, all preparations for the night's rest had been accomplished. Dark clouds advised us to improvise with oil-cloths a tent, which was fastened to the earth by ropes and pegs. Then we said good-night.

At 5 of the succeeding morning part of the environing dewy landscape was reconnoitered. After a ten minutes' stroll another sheet of water—Scattering Rice—was espied. On the ridge an empty pine tar can, partridge feathers, chips, tent-poles, a tag with the name Rev. Th. G., etc., bore evidence that others' before us had considered this charming region "good medicine" for overwrought body and mental weariness. But at present we seemed to have nature "devoid of modern improvements" all to ourselves, and were not sorry for it, for this, to my view, belongs to the very acme of camping.

Midnight it had become cooler and cooler. Gusts of wind rushed through the branches, first singly, then in quick succession, the sun was veiled more and more by the blue-gray clouds that rolled by. Nearer and nearer growled the thunder, and slowly fell the first drops, coming faster and faster until they had degenerated into a complete deluge. At first we betook ourselves to the underbrush, and endeavored to look at the funny side of the thing, but failing to find it and things appearing rather suspicious, an oilcloth was spread between four trees. Here we squatted for two full-sized hours, till the last dry thread had been well moistened and the pipes had gone out. Seeing no chance here to become wiser, and especially wetter men, we resolved, after a counsel of war, to hasten over to the north side where, the evening before, we had perceived a pile of boards. Five minutes' hard pulling brought us there. A location was chosen, boards were dragged, nails were searched out, we measured, hammered, pounded—within an hour 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 irrequiet, 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-circled 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 Phœbus's golden chariot wheeled into sight, I feverishly pursued the causes of a tickling sensation, of which I had zealously but vainly struggled to rid myself since the stars had begun to fade. They relished me extremely, the frisky darlings. They and their scientific name escaped me, but an Indian once described them as "heap bite an' no see'em," hence their local appellation, "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 slyly 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; yonder, part of Otter Lake's glassy surface shimmering across; afar off, the hoarse notes of the wary loon; around me solitude and serenity. This was the picture on that morning. It will forever form one of the pleasant reminiscences 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 papposes 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 grotesque designs on the pile of wood that the greedy element consumes, the eye follows idly the weird shadows dancing on the sombre background while

"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 vision 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 pellicid shallows to bathe their lithe forms and to nibble of the water lilies, 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 mis-ed us. When the pennyroyal and other preventives were used 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 swopt down the declivity chasing a muskrat of enormous size. 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 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 our 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.

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 Indians, 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 powered 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. 793-11.

Natural History.

THE SPARROW HAWK.

Editor Forest and Stream.

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 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 nuisance, I have to assure him of my personal knowledge of the fact, and while I pay due and respectful attention to what that learned gentleman says and thinks, I know that he is wrong in supposing that the sparrow hawk has not 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 nigh exclusively on field mice. I have, in my personal experience, never seen in my lifetime ten small birds seized by sparrow hawks. I have found the remains of 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.

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 "scientific teller" 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 Litchfield 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 abustaeum* 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. ELLZEY, M. D.

WASHINGTON, D. C.

THE DISTRIBUTION OF SPECIES.

BY 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 societies and various private enterprises, the propagation 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 business 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 fish propagating operations and enterprises, both from the scientific and natural history side, as well as from the economic point of view, are incidentally useful as promoters of public education.

I am sure it will not be an uninteresting digression if we turn for a few moments from the consideration of the distribution of species by natural methods, that is to say by the hand of nature, as well as that intentional and artificial distribution by the hand of man, which is such an important and interesting part of modern fish-producing operations, to take a glance or side view through the collateral vista of unintentional, 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 (*Blattia 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, *Aspidiotus* and *Lecanium*; also the eggs of various insects. Many seeds contain the grub, maggot or larva of insect forms. If the roots of the trees or plants are protected by a ball of the earth in which they grew, and the earth if protected, by a cover of bagging, from crumbling away and separating from the roots, a precaution which is usually practiced by careful nurserymen, both earth and bagging afford a hiding place for small animals, such as insects (and larvæ of insects), worms, slugs and other small forms. If traffic, through the facilities of its machinery, assists in distributing plants that are useful to man, by the same system it contributes to his discomfort and pecuniary loss. It is

