TUSSOCK MOTH ARMY IMPERILLING NEW YORK'S SHADE TREES

First Invasion Partly Checked, but Constant Guard Is Essential to Preservation of Foliage

Thousands Being Spent Annually Here and in Other Cities to Check Ravages—Why Birds Fail to Help

By O. R. GEYER.

ALMOST unnoticed save for the few thousand persons who have been proffering gratuitous advice more or less valuable, New York has become the victim of something new in German "frightfulness." While Manhattan and its sister boroughs have been striving manfully to raise and equip an army for overseas service, an invading foe has struck hard at the very root of happiness and pleasure for the entire city. A city denuded of its trees has been the threat which has been hanging over the heads of New Yorkers for more than a month.

Since the first invasion has been checked and the invaders routed after skirmishing of sanguinary character, it is only fitting that the veil of censorship be lifted and New Yorkers permitted to know something of the fate which they have so narrowly escaped. Once they know the story of how foreign foes have menaced the city's tree population the war against the enemy is expected to go on with even greater vigor during the summer, fall and winter. By next spring it is hoped that another invasion on such a scale as the one attempted this summer will be impossible, or, at least, that the enemy will be driven out before he can strip even one tree of its foliage and send it to the woodyard.

The fearsome little tussock moth you may have observed in the act of making himself free with the sidewalks, fences, trees, walls of buildings and other objects is the latest German enemy with which New York has had to deal. Almost overnight, while the citizens of the greater city were recovering from their patriotic celebrations on the Fourth of July the enemy army, millions and millions in number, swooped down on the trees. Before the average person knew what was going on hundreds of trees began to assume the appearance that comes to them after the first frost has sent the leaves flying. The last echo of the celebration of the 141st birthday of the nation had hardly died before curious citizens began to write letters to the editors demanding to know what was the nature of the plague devastating the trees.

Quick Work Done.

Right at this point it is fitting to pay tribute where tribute is due. Had it not been for the prompt action of the city Park Department in opening active warfare against the invaders the minute they were discovered the city would have been poorer by many thousands of its fine and stately shade trees. As it was, the Park Department being handicapped by the lack of equipment and men to carry on the fight in all sections at once, scores of valuable trees were defoliated and many of them will not leaf again next year.

An army of 125 men, working under the park commission and directed by J. S. Kaplan, city forester, has been shooting liquid fire, i. e., arsenate of lead, at the enemy for more than a month. Two powerful wagon sprays have been reenforced with a still more powerful and effective motor driven spray vehicle, and numerous small spraying outfits have been worked overtime killing the moths. Since July 1, when the first crop of moths came into the world, the force fighting the pests under direction of Forester Kaplan has been increased from fifty to seventy-five, and there is need of even more men. It is one of the costliest invasions ever made by insects, as it will require the expenditure of approximately $10,000 this year to control and exterminate the moths. This does not include the damage caused by the destruction of many fine trees, some invaluable, which cannot be replaced in years.

The tussock moths got in their deadliest work in downtown parks, particularly in Battery Park, City Hall Park, Tompkins Square and Madison Square. Portions of Central Park and Mount Morris Park were also invaded, and only the most prompt action by the city saved the splendid trees along Riverside Drive from being denuded of their foliage. The spraying squads got to Riverside Drive at about the time the enemy began its invasion and checked the plague before it even started. Congested traffic conditions in the downtown district made the work of driving out the moths much more difficult and allowed their voracious appetite for green tree leaves greater sway. At this writing, however, the destructive work of the first army of moths has been limited and the stage is being set for the return of a new family of moths in August and September. The war will go on all winter, however, until every last vestige of the invasion has been removed.

The tussock moth invasion is a recurrence of a plague which has swept Manhattan with more or less severity for several years, but this year's outbreak was more severe than the one of last year or, in fact, any invasion since five or six years ago. Unusual weather conditions interfered with the work of the forestry forces during the spring, as the constant rains made the spraying of park trees more or less ineffective. Usually the first of the two crops of moths makes its appearance about June 1, but for some unknown reason the appearance of the fuzzy caterpillars was delayed a month. Then, almost over night, a huge army of tree hungry caterpillars launched down upon the city. The first crop was gifted with the appetite of normal, full grown moths and within two weeks had started to feed on the leaves with a vengeance. They appeared in widely separated sections of the city and their coming was so sudden that they had defoliated several thousand trees before they could be checked.

Second Crop About Due.

After foraging on the trees for two weeks or more the caterpillars entered the cocoon stage and the females began the laying of eggs for the second crop, which is now about due. Each female lays from 300 to 400 eggs and her offspring has the hardy character of one accustomed to the ways of frightfulness. The tussock moth, by the way, is a native of Germany, first making its appearance in America shortly after 1890. Through some manner unknown, an egg cluster was allowed to get into this country, probably at the port of New York, and the doughty caterpillar has been multiplying and spreading ever since. The female, being without wings, falls an easy victim to slaughtering processes, but multiplies her broods so rapidly that this seems to make little difference in the number left to plague the public. In a manner equally mysterious the pest has spread to widely scattered portions of the central West and gradually is working westward.

The tussock moth is one of the most fearsome looking members of the moth and caterpillar families. With his two long horns which dangle ahead of him in a seemingly dangerous manner he is a cause of fear to birds and man alike, though his appearance is more awesome than his bite, if that be possible. The tussock moth also is heavily armored with long, tough hairs, which make him a poor diet for birds. At present New York has few, if any, birds which make a business of eating the tussock moth and his destruction has fallen mainly on the shoulders of man. In smaller communities where more varieties of birds are found man has had efficient aid in combating the peril to trees and shrubbery.

Passersby through the downtown parks and squares may have noticed with wonderment the action of park employees in brushing the trees with stiff wired brushes as carefully as though they were grooming a horse. The explanation for this is that they are collecting and destroying the white egg clusters deposited on the trees and shrubs by the female moths. In this manner, providing they could reach and destroy every cluster, New York would be entirely free of the pests for a year at least. This is impossible, however, as the female moth shows uncanny ability in selecting her nesting place. She is able to find the most inaccessible places in trees, about fences, under rocks, among flower beds, along walls and in the cracks and eaves of buildings.

Avoids Poisoned Food.

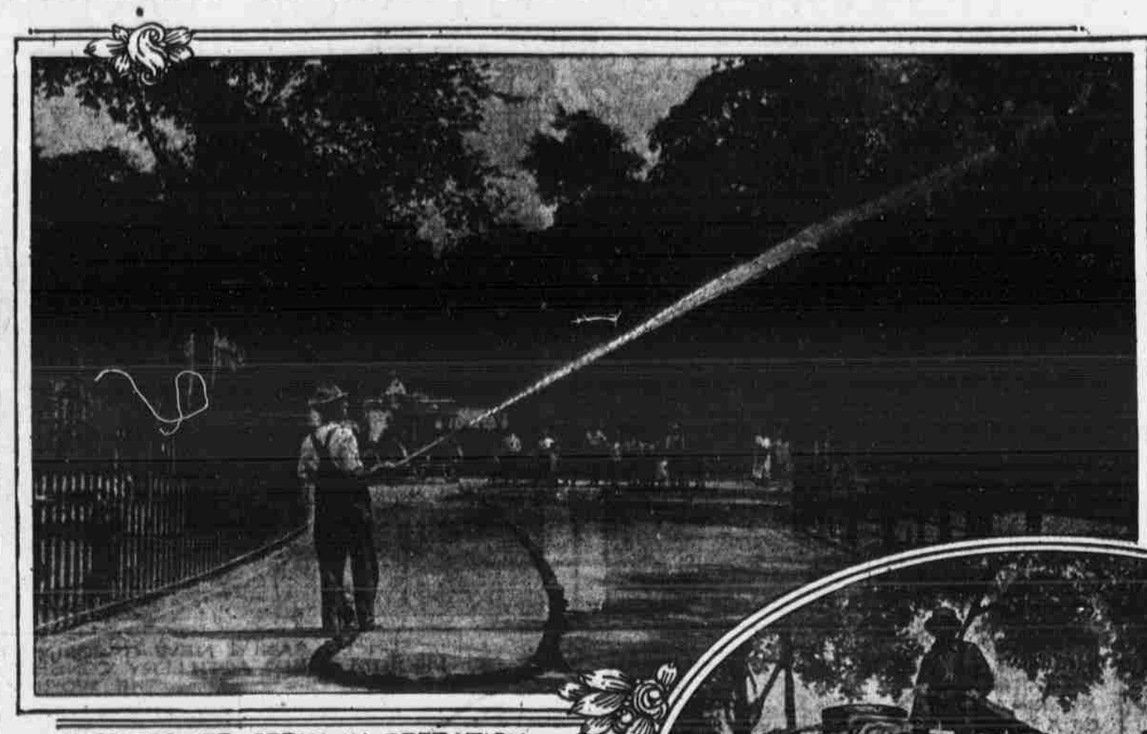
Being without authority to invade private property in search of these egg clusters, park employees have been compelled to direct their activities to cleaning the parks as completely as is possible. Complete cooperation between property owners and city officials is the only manner in which the moths can be prevented from breeding and spreading.

A little understood fact about the tussock moth makes the work of encompassing his destruction more difficult. He is perhaps the most highly educated member of the moth family and shows an uncanny disposition to avoid eating poisoned food such as solutions of arsenate of lead sprayed upon the leaves of his favorite tree food. For that reason the destruction of the egg clusters is the most effective means of combating the tussock specimen of the moth family. He is quick to detect the presence of poison, and will leave trees which are thoroughly sprayed and search elsewhere for leaves he may devour. Spraying therefore operates as a preventive which is well worth the cost.

Park Department officials foresaw the coming of the present epidemic months ago and put in unusually large orders for equipment and solutions for spraying, but these orders had to take their turn with war orders and were not filled until too late to do the good that would have been possible. Then, too, the caterpillars were hatched out simultaneously in all sections of the city instead of in one district at a time, as has been the custom. An aggravating obstacle has been the copious and numerous downpours of rain. No sooner had the trees of one park or street been made immune than a heavy rain came along, washed off the poison solution and opened the gates for a horde of caterpillars to attack the leaves. For this reason a dry season is the best period for effective work with spraying solutions.

But for the prompt action of the Park Department in obtaining the transfer of seventy-five men from other departments the war on the tussock moth invasion would have been sadly hampered. As it is, the force of 125 men has not been any too large to enable the Park Department to stamp out the plague as quickly as desired. A force twice as large could have been given plenty of work. By next season, however, the city will be in a much better position to handle the tussock moth invasions, and it is hoped that the damage can not only be reduced to the minimum but that the pest can be eradicated.

Although the tussock moth has attacked all trees with characteristic impartiality, the horse chestnut and the lindens have suffered the most, due probably to their low vitality, especially in crowded sections. There has always been a discussion as to whether the defoliating of trees would bring about their death, but investigation has resulted in the discovery that many trees, especially in congested districts along streets and in the parks, soon die when stripped of their leaves. In a few days time an army of moths can strip every semblance of green from a tree and leave it as barren as in midwinter.



HIGH POWER SPRAY IN OPERATION.

TYPE OF HIGH POWER SPRAY IN USE IN WAR ON TUSSOCK MOTHS IN NEW YORK CITY.

An amusing feature of the plague which has struck New York every year now for the last eleven years has been the interest the general public and amateur tree experts take in offering their advice to city officials. Almost every remedy from burning the pests off and losing the tree to the employing of youngsters to kill the pests has been proposed in hundreds of letters which reach the city forester each day. His mail has averaged 500 letters a day since July 4 and 99 per cent. of these letters contain suggestions as to how the plague can be abated.

A few curious ones ask for information as to the mystery of the disappearance of the leaves from trees they see on their way downtown. If the average suggestion were to be followed the remedy would be worse than the disease. One letter writer took occasion to criticise the Park Department employees for not burning the cocoons containing the egg clusters as they are found upon the trees. Apparently he had overlooked the fact that such drastic treatment would kill the tree nine times out of ten.

So far the tussock moth has confined its depredations principally to cities where it has fewer enemies to combat. Insects which prey upon the caterpillar are rarely to be found in densely populated districts, which accounts for the fact that New York has suffered more heavily than many other cities. A parasitic tachina fly and a small wasp fly are the two antidotes for the tussock moth found most commonly in a city of this size.

Inasmuch as no amount of spraying can reach and destroy all of the eggs in the closely woven cocoons, their removal and destruction by burning is the only sure means of bringing relief. If all families having shade trees would cooperate with the city and collect and burn all of the white egg clusters to be found about their homes the tussock moth could be killed off within another season. The city will continue its campaign against the caterpillar pest through the winter, collecting and destroying the millions of egg clusters to be found upon the trees. In fact, the winter is the best season for this preventive work, inasmuch as the absence of leaves aids in the locating of hidden egg clusters. A few neglected clusters will hatch enough moths to denude many trees of their foliage the following spring.

In Brooklyn, where school children were urged to collect and destroy these egg clusters, they gathered and destroyed bushels of cocoons of the silkworm family, while the walls of school houses, homes and other buildings and the trunks of trees continued to be plastered with the egg clusters deposited by the female tussock moth.

Other Cities Suffer.

New York is not the only city which has suffered heavily from the invasion of the tussock moth. It has appeared in enormous numbers in middle Western cities almost over night and before the public was aware of the peril thousands of costly shade trees had been destroyed. Minneapolis, Des Moines, Canton, Ohio, and other large cities have suffered heavily this year and last, and now are waging ruthless warfare against the pests. In Canton the city officials and Boy Scouts joined in a drive on the enemy, and in two weeks destroyed more than 3,000,000 egg clusters. The mathematician who has time to multiply this number by 300 or 400, the average number of eggs in each cluster, will soon gain some idea of the danger from which Canton saved itself. Banners were offered to the scout troops collecting the largest number of egg clusters, and the keen rivalry between troops resulted in Canton being cleaned most effectively. Several other cities which have been visited by the plague this year have adopted a similar plan.

In Minneapolis employees of the forestry department spent weeks collecting the egg clusters during the winter. They were armed with long poles to which sharp hooks were attached. It was thus made an easy matter to reach the egg clusters deposited high in the trees and bring them down. They were collected in buckets, soaked in kerosene and burned. The city employees were given wide latitude in invading private property in search of the egg clusters, especially in cases where the property owners were slow to act. In this fashion Minneapolis, too, escaped paying a heavy penalty to the tussock moths this summer.

Several methods of controlling the enormous appetites of the caterpillars have been tried with success. After the caterpillars have emerged from their cocoons the trees can be saved by placing at a height of several feet from the ground a band of "tree tanglefoot," a paper patterned somewhat on the idea of sticky fly paper. But this method is ineffective if the moths have been allowed to deposit their egg clusters high on the trunk or among the branches. Cloth bands soaked in creosote have been tried with good results where the invasion has been detected in time to prevent the invaders from gaining a foothold in the trees. Treatment of the egg clusters with a solution of creosote by means of a long pole to which a sponge has been attached also has been effective, but there is the danger that the application may not be thorough enough to reach and destroy the cunningly protected eggs inside.

Fear is entertained by Federal authorities that the tussock moth may migrate to the rural districts and lay its greedy hands on corn and other farm crops. In isolated districts a few egg clusters have been found on stalks of corn and this is believed to be the signal for the appearance of the invading army in farm districts in enormous numbers within the next few years.

Fight Costs Millions.

The tussock moth is general throughout the East, especially in New England, but that district has had such a hard fight on its hands in getting rid of the brown tail and gypsy moths that the presence of the German invader has attracted not nearly so much attention. Millions of dollars have been expended in fighting the brown tail and gypsy moths, whose appetite for tree leaves is even more voracious than that of the tussock moth. However, the same methods used in combating the brown tail and gypsy families have also been effective in curbing the tussock. The ability of the latter to detect poison more quickly makes him more wary and requires that the spraying operation be more thorough. Trees to which the tussock moth has taken a special liking are the elm, soft maple, linden, poplar, willow, oak, ash, catalpa, box elder, birch and horse chestnut. There is hardly a tree in New York's parks which is safe from the attack of a hungry horde of caterpillars, however.

The business day of the city's forestry experts is by no means marked by inaction. The care of the thousands of stately trees to be found upon the streets and in the parks has become an increasingly important problem as the congestion of population has increased. In twenty-five years, when New York has added a few more millions to its population, the burden of saving the trees from their enemies will become even more pressing. New Yorkers have been lucky, however, in having escaped from many of the tree pests found in many instances. The fiercely destructive brown tail and gypsy moths have not made their appearance in the city in any large numbers as yet. Much trouble has been had, however, with some of the scale diseases, which have gained a foothold in the parks. The oyster scale, leaf blight, scurfy scale and other tree diseases are best controlled by the application of poisonous liquid solutions, and for this reason the high powered spraying equipment is always in use. By next year it will have to be increased considerably if the tussock moths return again in such abnormal numbers as this summer.

The science of tree surgery has been well developed by experts in the employ of the Park Department, and hundreds of splendid shade trees have been saved from untimely death by the application of this knowledge. Trees several hundred years old, on the verge of an early death due to senile decay, have been saved for another 50 or 100 years by these surgeons, who have used knife and saw in cutting out the diseased sections and filling the cavities with concrete. Constant inspections of trees are made to detect the early signs of decaying diseases, and storm damaged trees are carefully trimmed and treated to avoid the diseases to which such specimens fall an easy victim.

The work of keeping the trees alive and in good condition in the parks has not been so difficult as the job of nursing the trees planted along sidewalks in congested districts. Because of the adverse conditions under which they are planted these street trees have become a great care, and their number is being increased each year in a well designed programme for the reforestation of the city's streets. Each year an average of from 2,000 to 3,000 new trees are set out in the streets and in the parks. Each tree costs the taxpayer an average of $45, but it is a well worth while investment. Gratings must be provided in the sidewalk so that the roots may gain what little moisture they can, and small steel fences must be provided to protect the young trees from horses, children and other dangers.

The excellent work the Park Department has been doing in this respect has been bearing fruit in residence neighborhoods in the upper city, where local associations or women's organizations have taken over the work of reforesting the streets. This summer citizens have raised enough money to plant trees along several streets, and this work is supplementing that of the city. In the next few years, when widespread interest has been aroused in this work, the job of reforesting the city will proceed much more rapidly. The time when the average New York residence street will be lined with healthful, cooling trees is not far distant, even though ceaseless vigilance is to be the price of such a gain.

The Park Department is giving increasing attention to the planting of new trees and has a foreman and one gang who do nothing but attend to this sort of work. This gang attends to the planting of new trees, pruning, cultivating, watering and spraying of other trees, repairs cavities and injured limbs, sprays and fights off insect enemies. A wide range of trees is being planted in the parks, but on the streets two hardy varieties, the Oriental plane and the Norway maple, have been selected as the best specimens. Their heat and drought resisting qualities commend them, especially in districts where conditions are so congested as to provide the worst imaginable surroundings for newly planted trees.

PAPA BLACK BASS REARS FINNY FAMILY, SCIENTIST FINDS

Female of Small Mouthed Variety Utterly Ignores Duty, but Male Guards Eggs and Young—Hatchery Expert's Studies Reveal Odd Life

By JEANNE JUDSON.

FABRE and Maeterlinck may have discovered all that can be known of the domestic arrangements of the bee, but it has remained for one Dwight Lydell of Comstock Park, Mich., to reveal to a shuddering masculine world the startling feministic tendencies of the small mouthed black bass.

No fisherman who has ever tried to snare the small mouthed black bass—the gamest fresh water fish not excepting trout—would ever have suspected him of believing that man's place is in the home. Yet such is the unpleasant truth as proved by Mr. Lydell during fifteen years of close study. Mr. Lydell has lived with small mouthed black bass as fully as anything without gills and fins can live with a fish.

When Mr. Lydell first attempted the rearing of small mouthed black bass in the Michigan State fish hatchery he was laughed at by all the fishwise men in America. They said that the small mouthed black bass was too delicate and too wild to ever be reared successfully in a hatchery. Yet the demand for small mouthed black bass was great and Mr. Lydell determined to try, with the result that he is now considered the greatest authority on small mouthed black bass in America, and the national hatcheries have adopted the methods which he developed in his State hatchery in Michigan.

In the rearing of fish Mr. Lydell as well as all other fish experts had gone on the theory that woman's place is in the home, and much of the failure to rear black bass (small mouthed should be understood) had been due to this mistake.

Females Ignore Their Task.

"As a matter of fact the frivolous feminine black bass cares nothing at all for home life or the rearing of children," says Mr. Lydell. "The men of the family, however, are intensely paternal. As the season of mating approaches Mr. Black Bass busily engages himself in the building of a home. With his nose he pushes small stones around on the bottom of the shallow water of the pond until he has made a saucer shaped hollow about two feet long. One side is usually sheltered under a log or rock. When the basin is formed Mr. Bass cleans and polishes the small pebbles with his tail, fanning away every particle of dirt and vegetation until the little nest shines like gold through the dark water in contrast to the weed clogged surroundings.

"When the home is finished Mr. Black Bass goes out in search of a wife. This is sometimes a difficult matter, as the ladies are not at all domestic. However, Mr. Black Bass is never discouraged. He leads one lady to his bower and if she flips a scornful fin and departs he goes in search of another. But just where peaceful domesticity should begin it ends, which may be one reason why Miss Black Bass is so reluctant to go into the charming home prepared for her.

"No sooner are the eggs deposited on the smooth, golden pebbles than Mr. Black Bass in a great rage drives his wife from the house, declaring her to be unfit to care for the children. There are only abbut five thousand of them anyway, and he can take care of them himself. He hovers over the nest night and day, fanning the spawn clean of sand which might smother them, and making vicious attacks on enemy fish that show a tendency to make a meal of his precious offspring. To be sure there are only about five thousand children in the family, but they take up twenty-four hours a day of their father's time."

Mr. Lydell, unfortunately, has not made a study of the activities of Mrs. Black Bass after being driven out of her husband's house, so no one knows how she spends her time. It is probable, however, that she attends mothers' meetings and literary clubs, or perhaps she gives lectures to the men, telling them the latest developments in child culture.

"Most people seem to think that fish spring full fledged from the spawn and then go promptly about their own affairs," said Mr. Lydell. "If this were true Mr. Black Bass would find the duties and responsibilities of fatherhood comparatively light, but like many other tasks the care of five thousand infant black bass is much more difficult than it looks.

"The eggs hatch in five or six days but the fish are still helpless. They have no eyes and no mouths, either large or small, and are fed by means of a food sack which is absorbed as the fish body develops. All the time this food sack is being absorbed—a week or more—the babies lie close in the nest, watched by the father, who keeps the water running clean and clear over them by fanning with his tail, and guards them from the predatory fish who might enjoy making a meal of these water babies. Of course, in a State hatchery pond there is really no danger from this source, but Mr. Black Bass patrols as diligently as if the water were full of these enemies.

"When the babies do finally develop eyes and fins and tails and mouths the father gives up the long fast which he has maintained during the nursing period. All this time he has not stopped to eat or sleep. Now the babies must eat, so Father Black Bass goes out in search of food, swimming proudly away with his children, which have now reached that stage called 'fry,' swimming around them to keep them together, and leading them to the best fields for food, which consists chiefly of water fleas. Just how long the father continues to swim with his children is not definitely known, for before he deserts them they have grown large enough to be taken out of the pool and put in the tanks in which they are shipped to the lakes and streams where they provide 'sport' for thousands of fishermen who do not know or care whether they are nursed by the masculine or the feminine side of the house.

DWIGHT LYDELL

"This year," says Mr. Lydell, "the industry of fish culture has assumed a new importance. Everywhere people are trying to increase food production, and if this means larger crops for the land it is no less advisable to reap larger harvests from the water. Fish hatcheries all over America have received instructions from Washington to increase their outputs this year. Everywhere people are being advised to substitute fish for meat as far as possible on their tables, which means that we are doing more than provide sport for fishermen. Last year the output of the Comstock Park hatchery was 42,000,000 fish; this year it will be much larger.

"The crop of small mouthed black bass from this hatchery last year was 40,000, but we raise many other varieties—large mouthed black bass, blue gills, yellow perch, wall-eyed pike and the Chinook salmon. The Chinook salmon is really a salt water fish, but a few years ago we experimented and discovered that it can be grown in fresh water as well, and it is being raised in inland hatcheries. We will send out at least 50,000 of these fish this season."

Each State Has a Hatchery.

There is at least one fish hatchery in every State in the Union, though few of them are as large in output as the one conducted by Mr. Lydell. In the lake States, Michigan, Wisconsin and Minnesota, with their thousands of small inland lakes and streams, there are numbers of these hatcheries and in addition the Federal Government maintains national hatcheries in the Great Lakes and Government owned rivers. The figures of the national fish crop, estimated on the annual output of the Michigan State hatchery at Comstock Park, would be too large to mean anything.

It is probable that guards will be placed around all of these hatcheries, for the destruction of the fish would mean the destruction of an important part of the national food supply. Even in peace times unsportsmanlike fishermen have been known to drop a line into one of the ponds at night and walk away after half an hour's "sport" with a catch worthy of the most enthusiastic fish story.

Mr. Lydell has been engaged in fish culture for over twenty years. He built the hatchery at Comstock Park himself in accordance with plans developed after years of study. He has twelve artificial ponds, deep in the middle and shallow at the sides. Each pond is fed with fresh water from running streams. The water in the ponds must not be above or below a fixed temperature or the spawn will die. The temperature is maintained by shutting the running water off when the ponds get too cold. Each pond is provided with sufficient vegetation to maintain the supply of oxygen, even when the fresh water is shut off. Each pond contains only one variety of fish, and through the clear shallow water Mr. Lydell can watch every detail of their lives until through years of study they have become real personalities to him.

Has Proved His Theory.

"The small mouthed black bass are the only kind of fish in which the functions usually assigned to the female are almost entirely usurped by the male," said Mr. Lydell. "When after three years of studying the fish in their wild state I made a report to the effect that the male nursed and cared for the young other men in fish hatcheries laughed at me. They said it was against every rule of nature for the male to care for the young, but a few years of experimentation proved that I was right.

"Another thing that I have learned about this most interesting of my fish is that an equal number of males and females must be put in the pond. If the males predominate they fight and kill each other during the mating season and they are so busy fighting that no families are raised. I don't know why the males assume all the home duties. They are certainly not effeminate, a thing which should be carefully noted by men who want to keep women in 'their proper sphere'; instead they are the gamest fresh water fish in the world. Not only do they fight each other but any fish that comes near the nest. They will even strike at one of the attendants if he happens to come too near the nest when feeding the other fish.

"Another curious thing about the small mouthed black bass is that it is the male who seems to care most for dress. In almost every other variety only the female changed her 'dress' during the courting season. But the small mouthed black bass changes his sober colors and dons bright yellow stripes and mottles when he goes courting.

"The men, in other words, take a vital interest in children and clothes, things supposed to be in women's sphere, while the women do not seem to care about either; but that doesn't change the fact that they will fight viciously on the slightest provocation. In small mouthed black bass society the 'female of the species' is certainly not more deadly than the male.

"No one who has lived with fish and understands them as I do will ever call a stupid person a 'fish.' Fish are as intelligent as dogs or horses and far more interesting. The aquatic world is one of perpetual interest and fascination. I have learned a few things about fish, but a whole lifetime is really not sufficient for the study. Every variety has its peculiar habits and every individual fish has a personality of its own."

WHISTLING A WEATHER SIGN.

"WHERE I live," said Mr. Jerrigleby, "I am pretty well shut in. I can't see the sky, and so I can't by observation get much of a line on the weather, but on rainy days I do get, without looking, one tolerably certain indication of when the rain is going to stop, the sameness being the whistling of boys passing in the street.

"When I hear the boys begin to whistle I know it will soon clear. I don't pretend to understand exactly why this is so, but I know it comes so nine times out of ten.

"Of course, being out of doors, they may see signs that I can't see, but I prefer to think that their whistling is automatic, involuntary, due to some still invisible change, or impending change, in the meteorological conditions.

"In gloomy, settled, stormy weather nobody whistles, not even boys, but when brighter weather comes everybody perks up, and my theory is that the boys, with their alert, keen sightful susceptibility to impressions, sense changes in the weather quicker than anybody else.

"I have observed this many times and it is a practically sure indication when on a rainy day you hear boys passing along the street whistling you may be reasonably certain that it is going to clear up."