FISH CULTURE.

A Visit to the Credit Forks Hatchery.

The Economic Value of the Brook Trout—The System of Nursery Ponds—Millions of Brook Trout fry—With the Gentlemen of the Fish Ponds.

Pisciculture, or, as it is commonly called, fish culture, is one of the many new occupations which have sprung up as the result of modern enquiry, in response to pressing necessities.

A party of gentlemen interested in fish culture, chiefly of the game fishes, met the other morning on the station platform of that picturesque spot known on railway time tables as the Forks of the Credit. They came from as far east as Uxbridge, from Toronto, from the west as far as Woodstock, and the north was represented by Owen Sound. The intent and purpose of their meeting was to visit, at the invitation of Mr. Charles Wilmot, the Credit Forks trout preserve and fish hatchery.

Mr. Wilmot was at the station platform with suitable rigs to drive the party out to the preserve, and a drive of a mile and a half through narrow passes between steep hills where the boiling waters of the Credit thundered between rocky boulders, along a sinuous road where occasionally the dark evergreens met overhead, soon brought the party to the fish ponds. The spot seems to have been intended by nature for the purpose to which it has been put. A miniature lake, with an island covered with evergreens, bold, rugged hills on every side, now covered with snow, gave a faint idea of

THE PICTURESQUE BEAUTIES

of the spot during the summer solstice. Those who have been there during the summer say it is the fisherman's paradise, and if Isaak Walton could only come back to life again like Rip Van Winkle, and should fortune bring him to this spot, he would forthwith sit down and write another book dedicating it to the "Contented Angler."

Mr. Charles Wilmot, proprietor of the preserve, has had eighteen years' experience in fish culture. He was connected with the Dominion hatchery at Newcastle, being the officer in charge of the hatchery, and was also appointed Dominion Inspector of Fish Culture. This important position he resigned about six months ago to give his whole time to the cultivation of game fish at the Credit Forks. Mr. Wilmot is a young, active man, and is possibly the best practical authority on fish culture on the continent. There are none of the mysteries of pisciculture which he has not solved, and he has advanced practical ideas in the business which he could not put into practice in the Dominion service, as he was a subordinate, and one of the reasons for his resignation was to demonstrate that it was necessary to go one step further in the cultivation of fish to guarantee positive results. In a few words, this idea is that it is waste of money to turn fry loose until they are nine months old and able to elude their natural enemies, the larger fish. To carry out this idea requires nursing ponds, where the fry are turned loose and fed until nine months old before being turned adrift in the lakes and rivers.

At the Credit Forks Mr. Wilmot has built a fish hatchery which is a model of convenience, and which contains improvements never dreamt of in the older hatcheries. He has completely revolutionized the old methods of hatching the spawn, and has put all the ideas gathered during his years of experience to a practical purpose.

The building, which is only 30 by 20, has two floors, and has now in the hatching pans two and a half million trout spawn.

To economize space and to ensure perfect success, Mr. Wilmot has discarded the old plan of hatching troughs and has replaced them with large galvanized pans in which hatching pans of perforated zinc are placed. In this way he is able to do twice the work in half the space; besides the galvanized iron will last ten times as long as

THE WOODEN TROUGHS,

which have to be replaced at a large expense every third year. Each pan is fitted with drainage tubes, and in the pans of this building Mr. Wilmot has more wild brook trout eggs than any other hatchery on the continent.

Briefly described, the process of hatching fish is as follows:—The wild brook trout caught in mountain streams during the summer are kept in vats until they are ready to spawn. The females and males are then stripped into pans, where the roe is thoroughly impregnated. The tiny eggs are then placed in the perforated pans, where water of the purest kind is allowed to flow constantly. About the middle of February the eggs begin to grow darker, and when the place was visited yesterday many of the young fry were swimming about, each about the length of a pin. The fry as soon as it loses the egg-sack is fed on artificial food until they are about six weeks old, when they are turned out into the nursing ponds. It is in the latter respect that Mr. Wilmot claims a distinct advance. He has, all told, nine ponds. Into these ponds the fry are turned and fed until they are nine months old, when they are about six inches long. At this age they are past all danger from larger fish. Wherever Mr. Wilmot disposes of fry he advises the use of nursing ponds, as without these not ten per cent. of the fry ever reach maturity. With the nursing ponds Mr. Wilmot claims that the death rate is so small as to be absolutely nil. The thousands of

FINE HEALTHY FISH

a year old in the ponds amply demonstrate the truth of Mr. Wilmot's theory. The appliances in the hatchery differ largely from those in use in the Government hatcheries, and the nursing ponds are indeed a distinct advance. For nursing ponds Mr. Wilmot estimates an acre of water for a million fry. In the hatching pans are three kinds of fish eggs—brook trout, California or rainbow trout, and German or brown trout. The first named fish is well known to every fisherman. The California or rainbow trout is a gamier fish than the brook trout. They mature earlier and grow to be seven or eight pounds in weight. The German or brown trout (salmo Alpinus) is a newcomer. Of the numerous species of foreign fish few give the promise of success which the German trout furnishes. It has received considerable attention in several States, notably New York and Michigan. They are hardy in character and in habit clear, cold, mountainous streams, and they are not migratory in character. In colour they are what might be termed a deep olive, spotted with crimson and grey. They are irregular in moltings. Being rapid in growth they attain a larger size than the speckled trout.

In view of the rapid depletion of the trout in the fishing streams of this province the importance of the work in the direction laid down by Mr. Wilmot cannot be overestimated. The economic nature of the brook trout can hardly be estimated. One of the members of the Michigan State Legislature in 1887 said "The cash value of brook trout in my county alone is worth at least $10,000 a year." If this is the case in Michigan, it is surely applicable to this country, where all kinds of game fish are

RAPIDLY DISAPPEARING.

In many of the States great activity is shown in restocking streams that have been fished out. In the thickly-populated part of this province the brook trout is entirely killed off. Steps should be taken to repair this loss. Many private individuals are taking steps in this direction, and are procuring fry and planting them where they can be preserved. Mr. Wilmot has already disposed of about two million fry for this purpose.

From the cultivation of brook trout to that of salmon trout and whitefish is but a step. This has been carried on at a vast expense by the Dominion Government for twenty-five years. Millions of fry have been liberated in the inland lakes without any appreciable result, and every year the fishermen are harassed with more stringent regulations and close seasons until all honest fishermen are driven out of the business. There is no doubt that there is something wanting to make the artificial propagation of fish a success, and that something is the nursing of the fry until the little fellows are able to take care of themselves.

In view of the success that has followed Mr. Wilmot's experiments in nursing ponds, it would be a wise plan for the Dominion authorities to take this system up and adopt it, so as to save the needless waste in turning small fry into the great lakes, where ninety per cent. of them die of starvation, or else are devoured as choice morsels by full grown suckers, pike, and herring.

CANADIAN HAY IN ENGLAND.

A Britisher Speaks of the Prospects of Development.

There is a Fairly Good Market But Cheaper Freight Rates Are Needed—Some Hints About Curing Hay.

Among the residents of Montreal for the past eight months has been Mr. J.Y. Keeble, representing Messrs. Keeble Bros., whose headquarters are in Peterboro, England, with branches amongst other places in London, Birmingham, Manchester, Nottingham, Sheffield and Bradford. The firm is one of the largest in Great Britain, dealing in hay, straw and roots. Saturday a Montreal reporter had an interview with their representative here on subjects that are decidedly interesting to those who are looking to the advancement of the country's commerce and which, as shown below, are well worthy of study by the interested parties. Of course Mr. Keeble speaks from his own standpoint; yet he deals frankly with the subject that he was interviewed on—that of exporting Canadian hay and straw to Great Britain.

At the opening of the interview Mr. Keeble was asked how much he had exported, and said about ten thousand tons of hay and about a hundred and fifty of straw, which has been already landed on the other side.

The interviewer then asked why he came to Canada to buy hay, and received for his reply. "On account of the scarcity of hay in the south of England owing to the severe drought. At this point it is best to state that before I left for Canada members of our firm had interviews with Sir Charles Tupper regarding Canadian hay and these interviews were so satisfactory that when I came here I bore a number of letters of introduction from that gentleman."

"How is the Canadian hay suited for the British markets?" was the next question asked.

"At the present time from my latest advices the Canadian hay has brought down the price of English hay about ten shillings per ton in comparison. Your hay is of a fairly good quality as the English purchiers are finding out after some six months of importation. But your hay can be decidedly improved," said Mr. Keeble, emphatically. "In the first place I think that if the Canadian hay was cut earlier in the season, while there was more nutriment in the stem, it would compare more favorably with our English hay. By its being cut so late in the season and when so ripe the seed is all shaken out before the hay is placed on the British market, and the result is a loss which varies according to its overripeness. If more attention was paid to this point by your farmers they would receive a larger price per ton. In the second place another mistake made by your farmers here is in growing all timothy hay for the English market. A mixture of timothy and clover always commands a higher price from the consumer. The price of Canadian hay in the British market was gradually advancing until after the embargo on Hungarian hay had been removed, and now, as a consequence, the price is falling, and I do not think it will advance again until the new crop, and that advance depends on the British crop of the coming season. One fact in connection with handling your hay for the British market is that it locks up capital from three to four months and thus the interest is lost on all the money, as all the financing has to be done from Great Britain. In handling Hungarian or hay from other countries, bills of exchange are used and the result is that the country shipping and the country receiving both help to finance the trade. One thing that has to a great extent hurt the Canadian export trade in hay and straw is the exorbitant rates for freightage, especially on the ocean. At present it costs sixty-two shillings and sixpence to carry a ton of Eastern Townships hay to London for which the farmer receives from $7 to $8 to n, according to quality.

Mr. Keeble was asked about the shipping of Canadian straw to the British markets and replied:—"Yes, the trade was inaugurated in January. I sent sixty tons for a trial and other shipments have followed, but I am afraid that the rate the steamship companies are asking for freightage of straw and for hay will cripple the trade, as straw, when baled, practically takes up the same space as hay and therefore ought to be carried for the same rate. There is no doubt that there is a large and increasing market in England and Scotland for Canadian straw if the freight rates will allow it to be brought there, but that is yet an unsettled question as far as a staple trade is concerned, for although straw can be bought here at present for about $3 a ton, yet landed on the other side, without adding dock dues, the cost reaches about, and in fact very close to, $18 a ton."

The interviewer asked Mr. Keeble to give an instance of freight charges, which he did, with the remark as a preface: "The instance It will relate conclusively shows that the steamships got more per ton for carrying a cargo from Montreal last autumn than they did for some American cargoes. But to show you how it varies," he continued, "when navigation was open in this port last autumn it was far cheaper to ship to the other side via Boston, for although railroad freights to the port of Montreal were about one dollar a ton from the Eastern Township districts, and at the same time four dollars from the same district to Boston, still the difference was easily made up in the less cost of ocean carriage from the latter port. The large demand for freight space out of this port last autumn accounts for this, in my view."

In conclusion, he said that according to his latest advices from England the present price for first quality Canadian hay in that market was 100s a ton c.i.f.

NEWS OF ELECTRICITY.

ELECTRIC RAILROAD MAIL SERVICE.

In establishing an electric railway mail service, Ottawa has made a move which is likely to be followed by many other progressive cities. The mail cars are run on the ordinary city lines, and are found to greatly improve the house to house delivery of mail, as well as the collection of letters from lamp-post boxes. Each car is 20 feet long, with vestibuled platforms, and is driven by a thirty horse-power motor. The interior is provided with the requisite facilities for loading and unloading the pouches. No sorting is done on the car, so that the usual glass windows are dispensed with. Each car is fitted with a special alarm gong, which gives a different sound from the bells on the passenger cars, and so makes its approach known. The service has turned out so well that it is proposed to extend its operations to suburban districts.

ELECTRIC HORSES IN WALHALLA.

In the opera of Walkure, by Wagner, where aerial horsemanship plays so prominent a part, as the Valkyries dash across the back of the stage on their fiery steeds, carrying the bodies of the heroes slain in battle, the use of special mechanical apparatus is imperatively necessary. The difficulty is generally overcome in Germany and England by the use of a magic lantern slide projected on to a scene, though in the recent production in Paris a sort of switchback arrangement was resorted to with considerable success. It is stated that an English engineer has now solved the problem by constructing operatic horses, anatomically correct, the limbs of which, when electrically connected, imitate the motion of galloping in a most realistic fashion. Their haunches rise, their manes and tails float on the breeze, steam issues from their nostrils and electric sparks from their eyes. It would give timorous tenors and nervous Valkyries confidence to know that through all this storm and stress, the backs of the flying steeds remain as steady as a rock.

ELECTRIC SUNSTROKE.

French doctors have been attempting to find a remedy for what has been termed "electric sunstroke," an ailment in which the trouble arises not from heat so much as light. This peculiar affection frequently befalls workmen employed in melting metals by means of the electric process. It appears from observations made at steel and iron works that the intense voltaic arc between the carbon and the metal to be melted emits rays which, even at a distance of 30 feet, produce a painful, hot, pricking sensation, like that of a burn, on such uncovered portions of the body as the throat, face, and more especially, forehead. The skin of the parts affected becomes either copper-colored or assumes a bronze hue; the eyes, in spite of black glasses, are so intensely dazzled as to be useless for some minutes, after which anthopsia (yellow vision) sets in, everything appears saffron-colored, the conjuntiva are inflamed and there is a gritty feeling as of sand under the eyelids. There is frequently great pain, also sleeplessness, and, in some cases, fever. It is now found that the surest and quickest cure for this affection is perfect rest in a subdued light. Under these conditions the symptoms subside, usually in a few days, the skin of the affected part peels and the patient is restored to health.

CLAIMS HE'S A CANADIAN.

Alleged French Spy Captured Near Turin

A Turin special says:—A despatch from Pinerolo, twenty-one miles from this city, announces the arrest there of Captain Gastaing, who is suspected of being a French spy. The prisoner says he was sent by the Canadian Government to recruit emigrants. He had seven thousand francs in paper and gold in his possession. Before he was taken into custody he was watched for some time prowling about the fortress of Fenestrelle and engaging in conversation with the soldiers there.

There are a few stranded actors in Russia. When a manager takes a troupe on the road, he must first deposit "caution money" with the Government, so that in case of the venture proving a failure, the "caution money" can be used to convey the actors to their homes

It is said that a female codfish will lay 45,000,000 eggs during a single season. Piscatorial authorities say that, were it not for the work of the natural enemies of fish, they would fill all the available space in the seas, rivers, and oceans.

"A FORGOTTEN FORTRESS"

Sketch of the Ruins of Fort Prince of Wales in the Far North.

Distant From Any Route of Modern Tourist or Business Travel.

Before the Winnipeg Historical Society the other evening His Honor Lieutenant Governor Schultz delivered an address on "A Forgotten Northern Fortress." He had chosen this title for his address as being applicable, inasmuch as Fort Prince of Wales, being far away from any route of tourist or business travel, is scarcely ever mentioned, and its ruins are seldom seen by other eyes than those on board the Hudson's Bay Company's supply ship, which once a year visits those lonely shores.

Professor Bell, in writing His Honour some time ago, gave the measurements of Fort Prince of Wales as about 300 feet on each side, 20 feet high, 20 feet wide at top, with a wall base of 30 feet, the southern and western walls being faced with hammer dressed stone in regular courses, each stone being about four feet long and two feet thick; the other walls are faced with good rubble masonry. There is a bastion at each corner, and in each of these a well of water, still full, for the supply of the fort. I counted nearly forty cannon on the top of the walls, but as some of these are nearly covered with rubbish, others are probably out of sight altogether.

The slight discrepancy between his estimate of the height, and that of Mr. Spencer, may probably be accounted for by one observer including the foundation of the walls in the height; and the little difference in determining the exact width of the top of the wall must be charged to the condition in which La Perouse's gunners (who tried their best to blow up the whole fort), left that more easily destroyed part.

The sixteenth century closed with that western waterway to the Indies, which all men sought who went "down to the sea" in the quaintly rigged, queerly built ships of the period, undiscovered; and the earlier years of the seventeenth found the ardor of search unabated, and the goal the same. English Kings and Queens, choosing more northern routes than had the monarchs of Spain and France, failed as they had; Henry the Eighth sent the Venetian Cabot, who found Labrador in the way; Elizabeth sent Frobisher, who, turning its northern flank, found only the ice-blocked strait which bears his name. Davis and Wymouth followed; but it was reserved for

THE GALLANT HUDSON

to discover and sail into a strait, apparently upon the direct route to the west, which, opening into a wide sea, that daring mariner must have thought the secret of two centuries unlocked, and fancied that through fog and mist be scented the spice-laden breezes of Cathay. In 1610, mariners were not easily daunted by wreck and ruined hopes; and Hudson's tragic fate in the great sea he had discovered did not deter further search, for, in the years which followed, the frightened Esquimaux, flying in his kyack to relate to the old men of his band the strange apparition which glinted white through the mist, and was not the sheen of berg or floe, had but seen the sails of other adventurers who still sought what men had been seeking for three generations in vain.

Button and Bylot, Baffin, James and Fox, Hawkbridge and Jones, all failed to find the desired passage, and when Captain Zachariah Gillam, accompanied by M. de Grosselier, sailed into the bay in 1668, we may suppose that the English merchants who sent him had in view, as well as the Northwest Passage, those rich furs which, brought back by other voyagers, had begun to grace the shoulders of the beauties of the Louvre and of the English court; for, after wintering and trading in a rough stone fort on the bay, he returned to England with reports which gained for his patrons the aid of many gallant but needy cavaliers in obtaining from "Charles the Second, by the Grace of God, King of England, Scotland, France and Ireland," in the year 1670, a charter "of our ample and abundant grace," to "our dear entirely beloved cousin, Prince Rupert," etc., etc., of what was equal in extent to several European kingdoms, with powers which no potentate in Europe would dare to exercise to-day.

While the English monarch was thus disposing of empire to his favored cousin and courtiers, Richelieu was equally active in France, and parchment powers, signed "Henri" or "Charles" were given with that easy and reckless indifference to the rights of others peculiar to the time, leaving the overlapping boundaries of these vague grants to be rectified and adjusted with the powder and steel of the grantees, and the

TOMAHAWK AND KNIFE

of their Indian allies. England assumed ownership by right of maritime discovery; France, by those land and canoe explorations, which have left her language everywhere in the West, in the names of river and lake, cape, promontory and island. The English Company of Adventurers trading into Hudson's Bay, occupied the mouths of all the rivers, with palisaded forts or factories, and fished, hunted and traded from them, visited once a year by ships, which were watched for by that daring rover, D'Iberville, as Drake had watched for the Spanish galleons. The forts were attacked, and often destroyed, by the hardy voyageurs of New France. Surprises and reprisals continued, till Blenheim, Ramilies and Malplaquet had decided quarrels of more moment, and the Treaty of Utrecht, in 1713, left the English in peaceable possession of their forts, "factories and plantations," on Hudson's Bay.

With France thus prostrate, the English were to pursue, for over sixty years, their profitable trade in peace; but the recollection of burning forts and plundered factories was still keen, and the thunder of D'Iberville's guns not soon to be forgotten; and as their trade increased, there came with it the desire to fortify their best bay harbor, and preserve their principal entrepot from possible plunder; so upon a rocky spit, forming one side of and commanding the harbour of Churchill, was commenced Fort Prince of Wales. Vigorously at first was the massive thirty feet wide foundation begun; not, however, on the rude plan of former forts, but from the drawings of military engineers, who had served under Marlborough. Artisans were brought from England; the southern and western walls were faced with hammer-dressed stone; bastions were placed at each angle with a well of water in each, and after many years of labor and expense, four walls, each over three hundred feet in length, 20 feet high and 20 feet wide at the top, closed in and protected great stone buildings, which contained each one a prince's ransom in rich northern furs. Forty-two guns of the then heaviest calibre furnished the armament of the bastions and walls, and stores of food were provided to enable the defenders to stand a siege. The Chipewyans, from the far off Athabasca and Great Slave lakes, must have

GAZED WITH ASTONISHMENT

at its massive walls and portentous artillery; and its fame throughout all northern tribes must have been great indeed, and have environed with a vague respect the adventurous Hearne, who thrice between 1769 and 1772 left its gates, twice to return baffled and defeated, and lastly, on that most adventurous of all Arctic land journeys, to return with the secret of the Arctic coast at the mouth of the Coppermine river in his possession. Years passed on, and as the remembrance of pillaged factories faded and the pressure for increased grain in their rich trade became greater, and the barter more inland, so did the number of men kept at this sea-harbor depot become less, so that it was with great surprise on the 8th of August, 1782, that the thirty-nine defenders of the Prince of Wales Fort saw the bellying sails of three ships making straight for their fortress; and when, at six in the evening, they swung to their anchors six miles away, their pierced sides showing them to be vessels of war, their astonishment was great indeed. Strangers they evidently were, for soon pinnace, gig and long boat were busy sounding the approach to the harbor. Day-break saw them disembarking, and the morning's clear light showed to the thirty-nine defenders of the fortress an array of four hundred troops, bearing again the flag of France on those far northern shores. The summons to surrender was followed by a parley, and when the parley ended, the gallant La Perouse found himself in bloodless possession of a fortress which, properly garrisoned, might have defied all the ships of France that ever had entered Hudson's Bay.

The French Admiral quickly transported the rich bales of valuable furs to his ships, and replenished their depleted commissariat from the well-filled provision stores of the fort. Then came the license of the soldiery and the looting of the fort, to be followed by an attempt, which occupied two days, to utterly demolish it. But although French gunpowder was freely added to the vast English stores, yet the walls of the fort, this well built mass of masonry, resisted the best efforts of the French artillerymen to do more than displace the upper rows of the massive granite stones, of which it was mainly built, dismount its guns and blow up the gateway and the stone outwork which protected it.

The capture of this far-off northern fortress was cheaply and easily performed by the adventurous Frenchman, who extended his conquests around the shores of the bay; but the fortunes of war after a time turned again, and the company of adventurers trading into Hudson's Bay, who, at their own expense, had built the fort, for the defence of their trade, sent in a bill for many thousand sterling pounds to the British Government, for failing to protect their factory at Churchill; and when, again, peace was proclaimed, it was after the French plenipotentiaries had agreed to settle the bill for La Perouse's capture and demolition of Fort Prince of Wales. It was never rebuilt, and stands on the far-off northern coast, the still well-preserved remains of a massive fortification, the most northern one of British America, scarcely inferior, as such, to Louisburg, or early Quebec; its site admirably chosen; its design and armament once perfect; interesting still as a relic of by-gone strife, but useful now only as a beacon for the harbor it had failed to protect."

WOLVES IN ALBERTA.

Two Large Specimens Killed in the Macleod District.

On Saturday last, says the Macleod Gazette, Mr. T. Craig, of Meadow Creek, arrived in town, and reported having poisoned an enormous wolf near his ranch recently. Immense timber wolves have created immense havoc amongst the cattle ranging in that country during the present winter, and Mr. Craig, having lost a promising animal, determined to put a stop to their depredations; accordingly, the next time he visited town he laid in a large supply of strychnine, and upon reaching home he killed a worthless old crowbait, in the shape of an ancient cayuse, and after liberally besprinkling the flesh and intestines with the poision, dragged the carcass to the scene of operations, a point at a considerable distance from the ranch. Next morning Mr. Craig strolled out in the direction of the bait and discovered the bodies of two immense wolves lying upon the snow in close proximity to the poisoned bait. The one furthest away was quite dead, while the other was still struggling in

ITS DEATH THROES,

at least, so Mr. Craig imagined, so walking over to the dead adimal he examined it and then proceeded to drag it back to the bait. Upon turning around to pick up its mate he found to his surprise that Mr. Wolf had only been in a fit, and was already some distance away and picking up strength with every stride. Craig immediately started in pursuit, and after a long chase, which led him into the thick timber, the animal took another fit, and while in that condition Mr. Craig arrived upon the scene, and finally, with the aid of a club, succeeded in despatching the brute. With great difficulty the animal was dragged back to camp, and old timers who inspected it were astonished at its enormous porportions. It weighed 127 pounds, the top of its head was 10 inches across (between the ears), and it measured 6 ft. 5 in. from tip to tip. Its hide was peculiarly marked, being light grey, with three very dark stripes running through the fur, one down the middle of the back and one on each side. A band of about 18 of these ferocious animals have committed havoc in that neighborhood of late, and it is Mr. Craig's ambition to poison off the whole outfit before spring.

The longest continued cataleptic sleep known to science was reported from Germany in 1892, the patient having remained absolutely unconscious for four and a half months.