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THE CANADIAN SPORTSMAN AND NATURALIST.

No. 9.

MONTREAL, SEPTEMBER 15th, 1881.

VOL. I.

WILL THE LOBSTER FISHERY FAIL?

The demand for this excellent article of human food is increasing yearly, and the system of canning the crustacean is as perfect as it possibly can be. The question may, however, be asked,—Will the thousands that are captured every year, cause a scarcity? Will it ultimately produce a failure in the business? Our opinion is that the unlimited license given to parties to net salmon in estuaries and inside large rivers, notably the Natashquan, is to a great extent, the cause of the late scarcity of the fish in the Lower St. Lawrence. We are told that a French steamer made two trips from France to the North coast of the Lower St. Lawrence for Salmon this season. They offered and paid ten cents per pound, which is a fair price at risk. There are no objections to this trade, but we decidedly put down our foot and say with indignation, that the Government who aids and abets such wholesale slaughter has yet a heavy penalty to pay to her people. The law has been violated for filthy lucre. We trust this will not occur again. If similar netting is carried on in other large maritime rivers, the result will certainly continue to decrease the number of salmon. We have learned from one of the party who fished the Natashquan this season, that with few exceptions, all salmon taken with the fly had marks of a struggle in nets which were placed inside the estuary in the river. This is not giving fair-play to fish or lessees, the latter coming annually from England to enjoy the sport. Those who pay well for river surface fishing, have a right to demand the Fishery Department to keep the entrance clear, and we have positive proof that Mr. Jervois, the lessee of the Natashquan, has not been fairly treated by the Department, especially this year. The Federal Government make the sporting resources of the Dominion known to Europeans by distributing pamphlets

by agents throughout the nations, and a man of means induced to lease a Canadian river for the space of a month, afterwards discovers that the fish expected to run fresh from the sea instead of being full of vigor are lying sick at the bottom of a pool. This is anything but encouraging to sportsmen, particularly British Now, regarding the lobster it is different in its mode of life from a fish. The object of proprietors of canning houses should therefore be to prevent the destruction of female lobsters. When they are carrying their ova they should not be destroyed, but allowed to escape. It is the only safe mode by which the species may be kept increasing. Besides the young lobster has so many enemies that we may safely say thousands are destroyed after the crustacean becomes the size of our river crawfish. It is a glaring fact that this important lobster business is not properly recorded. We have no accurate figures as to the number taken in the Dominion for canning, nor any descriptive account of the establishments for that purpose. Tommycods and eels are noticed; fishes which are of little commercial value outside the Province of Quebec. Salmon canning is also in the same category as the lobster. Surely those two branches of Canadian industry should have some recognition among our fishing resources. Of course we make this statement from a Fishery report given in our last number. There may be Reports giving the amount of salmon and lobster collected in the Lower St. Lawrence for canning purposes, but they were not sent to us, and we therefore place the subject before our readers in order to show how this industry stands. The bays of Anticosti abound with lobsters, and although this fact has been known for many years, no attempt has been made to establish a canning-house on the Island. It occurs to us that there is a lack of keen venture among the Canadian people in

thus allowing a vast amount of good nourishing human food to be swallowed up by marine animals. We are of opinion from what we have seen of the lobster of Anticosti, that canning houses on the island would be a success. The crustacean in its season enters all the bays around the coasts, and by means of traps, immense numbers could be canned every year and a business of this nature can be established on the island without a large expenditure of money. We must however repeat, what we said before, do not destroy the lobster while carrying spawn. If you do, the business will fail. Greed and bad management may be said to have been the cause of destroying the productiveness of our salmon rivers. Let this not be the case with the lobster, which, although hardy and quite able when adult, to fight its aquatic battles with equals, has not the instinct to evade the traps laid for its capture. We are therefore anxious while they are at the mercy of man for food, that he will give them fair play in order that they propagate their species. We would be pleased to hear from any one interested in this subject, and communications giving additional information regarding the natural history of the lobster, or statistics of the trade will be of value.—C.

THE SHOOTING SEASON.

The time has again arrived when the Sportsman may lay aside his rod and reel, and with gun in hand betake himself to the forest or marsh, in search of game on which to exercise his skill. The young of the Black Duck, Teal, Woodcock, Ruffed Grouse, &c., are now pretty well matured, and strong enough on wing to afford excellent sport. During the early part of this month great numbers of Black Duck and Teal are shot in our various marshes, the hunter at this time, being usually able to secure a fair number of birds by paddling through the reedy streams, which are their favourite resorts, and picking them off as they rise at the approach of his boat; later in the season, how-

ever, as they become more hunted, these birds acquire a wariness which makes it necessary to adopt a different mode of procedure; decoys and covert flight shooting are then resorted to.

The Black Duck is at all times exceedingly wary, and will seldom notice artificial decoys. Sportsmen should therefore provide themselves with a few live ones, as though inconvenient to carry, they cannot always be procured in the vicinity of the shooting grounds. Woodcock and Snipe are not yet numerous; the greater number of these birds breed in the far north and migrate at the approach of cold weather, stopping for a short time at their favourite grounds as they pass, affording the sportsman an opportunity to vary his sport. During October the various species of Fall Ducks arrive in great numbers, and as they decoy readily, their flocks are considerably thinned before they have visited us many days. Although decoy shooting is tolerated in the greater part of the Dominion, it is not considered sufficiently destructive by some "pot hunters," and the use of swivel and punt guns is sometimes resorted to; this is, however, illegal, and should not be permitted.

Golden, Black Bellied and other species of Plover usually appear in great numbers during the latter part of September, and remain for some time before proceeding to their winter feeding grounds. Last, but not least of our game birds, is the Ruffed Grouse; as this bird does not migrate in Winter, it is generally sought by the sportsmen later in the season when most of our other species of game birds have departed. It is difficult to imagine a more exhilarating sport than a tramp after Grouse on a frosty morning in November. With a staunch, well trained dog, a fair bag may sometimes be secured, but as a rule the misses are frequent, and the sportsman must not be disappointed at an average of which he would feel ashamed if in the pursuit of other game.—WALLACE.

SHOOTING RESERVES.

The Montreal *Star* of the 8th instant, would make us believe that there are shooting reserves in Canada. That the Government should offer facilities for letting out certain rights to sportsmen. What rights? Where are these shooting rights or reserves? We have never heard of them and do not believe they have an existence. We know that the Government claim all the rivers, and offer to lease them every season? In regard to inducing Europeans to come to Canada for sport, we have one instance this year of how gentlemen from England are treated when they lease a Canadian river.

If the Government has shooting reserves, we would be pleased to know where they are? It is a new thing for us to learn that the lovers of the rifle and the fowling piece are not to enjoy the sport in season without asking permission from Government. When that pleasure is taken from the Canadian Sportsman, farewell to his rural liberty. It is quite sufficient that the Fishery Department lease the Salmon rivers without taking from the subject his rights in the marsh or forest.—C.

THE MONTREAL "STAR" ON FISH AND GAME.

The above paper in its issue of the 27th ult., speaks editorially on our Fish and Game. He says "out of five thousand eggs hatched by fish in a natural way, only about one egg will hatch out; out of five thousand eggs hatched in an artificial way, four thousand on an average are hatched out."

We ask the *Star* where he obtained this information? and furthermore what species of fishes are referred to?

The artificial breeding of fish, especially *Salmonidae*,—is certainly good, and doubtless may be productive when carried on in rivers connected with salt water; but to cast young fishes of the above order into an inland lake, is the most unscientific and expensive mode of fish propagation we have ever heard of.

The *Star* thus tells us that nature has lost a force, which is now supplied by artificial means. Nonsense; the disparity is too glaring, and has no facts to sustain it.

He says: "Take for instance, whitefish;" What whitefish? Why not name the species? Whitefish of various forms occur in almost every Province of the Dominion, and it may be possible that their isolation is the cause of enmity between them. Be this as it may, we have no proof that the parent whitefish devours its own eggs. It is, however a fact, that the sea trout will follow *Salmo salar* to its spawning grounds, where it devours the eggs of the salmon.

The most absurd statement made by the above paper is that ducks known as "widgeon redheads, canvas-back and bluebill devour fish spawn in immense quantities." This information is altogether new in an ornithological view, and the writer should certainly be awarded a leather medal for the discovery. Again, speaking of shad, it is useless to experiment on that fish; if they are allowed to propagate in their old natural way, the markets of the United States and Canada will always be well stocked with this fish in season. We contend that the artificial breeding in inland waters of fishes that frequent the sea, is both a waste of money and time, and the sooner it is abandoned the better. Protection during the close season for each species, is what we wish to see carried out, and if that is properly performed, the fish will do what the Creator commanded they should. It is nonsense to say that "our fish would go just as the buffalo and the moose are going." No living man can make a comparison between the forces acting on terrestrial and aquatic animals, more especially in regard to their abundance or scarcity; and if the writer in the *Star* had lately passed through the forests frequented by moose and caribou, he must have done so with closed eyes, as these animals have never been known to be so abundant as at present. We could inform the writer what has produced this, but that is not necessary at present. We

thank the *Star* for the latter portion of his article, and, if when writing on "Fish and Game," he would keep his eye on the "Pot-hunter," discover, arrest and fine him, then the space appropriated by the paper would be of use to all parties concerned.—C.

RARE BIRDS IN CANADA.

It may not be generally known that the Green Heron (*Butorides virescens*) breeds in Canada. During three years past, a few of these herons have been forming small communities in neighbouring swamps and woodlands adjacent to Missisquoi Bay. Mr. Chris. Beatty, our old sporting friend, presented us with a very good specimen on the last day of August. A sharp look-out should be kept for strange ornithological forms, as it is probable that many rare species which visit latitudes north of Montreal may be overlooked. In the month of June, several years ago, we shot a male of the Blue Bunting (*Cyanospiza parcellina*) at Baie Mille Vaches, on the north shore of the St. Lawrence. Instances like this illustrates the changes that occasionally occur in the latitudinal ranges and longitudinal circles of birds. The following birds were shot by Mr. N. A. Comeau, at Godbout, Lower St. Lawrence, in latitude 49 20. Yellow-headed Blackbird, (*Xanthocephalus icterocephalus*.) The occurrence of this bird in the above latitude is to us a paradox. Mr. Comeau is an intelligent student of Natural History, and his keen eye detected this bird in the neighbourhood of his house. We are not surprised when we record the accidental appearance in Canada of birds and insects belonging to the far West and South. Insects have been discovered in Canada which have so far puzzled Entomologists. They are supposed to come here by the force of atmospheric currents, but this is mere theory. Several specimens of the Blue Bunting were shot, and a nest of this species containing four eggs was found in a stump near Mr. Comeau's house. A nest of the Hudsonian Tit (*Parus Hudsonicus*) with four eggs was also found in an old

stump in the vicinity of Godbout. This is the second nest of this species found in Canada; Audubon having found the first while travelling in Labrador. The nest is a curious structure. The bird selects an old stump or dead tree, making a cavity similar to that made by the Black-cap Tit or Downy Wood-pecker. The Hudsonian Tit has an eye to comfort for itself and progeny; it lines the interior walls of the tree with hairs from the common white Northern Hare. When the nest is properly taken out it resembles a bag generally about twelve or fifteen inches long. The youth who discovered it, obtained ten dollars for nest and eggs.—C.

THE GODBOUT RIVER.

Considering the scarcity of salmon in the St. Lawrence this season, the Godbout scored a fair average. Two gentlemen fished it with the following result: 53 salmon, averaging about fourteen pounds each; 15 grilse, averaging four pounds each. A large number of sea trout were caught by anglers, besides 5635 trout taken by the seine after the salmon season was over.

THE ST. CHARLES RIVER.

In an article on Salmon and Trout Rivers and Lakes of Quebec in our January number, we made remarks on the St. Charles, near the city of Quebec. This river, at one time worthy of being angled for Salmon and Sea Trout, was doubtless a source of pleasure to a few Quebecers who loved the sport at that time, knowing also that these luscious fishes passed their doors towards the pools near Lorette. But alas! a change has come over the waters of the St. Charles, and the delicate Salmon will not now enter its poisonous waters.

It appears that a few years ago a building was erected on its banks, near Lorette, for the manufacture of pulp or paper of some kind. A pipe leading from these premises to the river conveys the refuse and poisonous acids into the clear spring water of the river, preventing the passage of fish and destroying all that

frequent its neighborhood. Why do the Fishery Department allow the waters of this river to be poisoned, when its officials are aware that a statute exists to punish any one who willfully do so? We demand inquiry and some explanation must be given in regard to this filthy drainage. The Department at Ottawa should see that a river long known to have been frequented by Salmon, and in which Sea Trout were seen a short time ago, is not to be destroyed with impunity. We are determined to expose every case of this nature coming to our knowledge, and when the parties or authorities who should abate the nuisance are slothful, we will have no mercy, but lash with the full force of our will.

C.

CANADIAN MUSEUMS.

When this Magazine was issued last January we intended to give sketches of the Natural History Museums of the Dominion, their means of support, and how the material is procured; in fact, all our knowledge regarding them, together with the influence they are supposed to exert in the instruction of youth. We, therefore, commence with

THE LITERARY AND HISTORICAL SOCIETY OF QUEBEC.

This is, probably, the oldest Literary Institution in Canada. It has been, however, very unfortunate—fire having destroyed its library and collections on two occasions, at least. Its present Museum was started when the Society became tenants of Morrin College, in 1861, after the fire which destroyed its library and Museum in the Banque Nationale building on John street, Quebec. The Museum is now on St. Stanislas street, in the College building. The collection is slowly increasing, but the room is too small, and poorly lighted. The collections of animals and birds are in good preservation, and there is also a fair show of ethnological material, affording instruction to students attending the College. Therefore, it is useful in its present position. We have seen enough of isolated collections or museums

in this country to speak intelligently on the matter, and we may say that, outside of an educational point of view, the public take little interest in them; but when connected with an educational institution, parents will support them because they are cognizant of the fact that the youth have a chance of obtaining a more accurate knowledge of forms preserved from every branch of nature. When Natural Science is taught in schools it is highly necessary that collections of minerals, shells (fossil and recent), and a good herbarium should be at hand, to illustrate lectures. When youth is determined to study, it is proper that the love for it should not be cooled by other objects in the way of arriving at the truth. We say that every University, College or School having a good Museum, claims the hearty support of the public, because the material forming these collections cost a large amount of money. Since the Literary and Historical Society of Quebec became associated with Morrin College, its Museum is a source of attraction, and many donations have been made to it of late years.

C.

REVIEW.

The Annual Reports of the Montreal Horticultural Society, and Fruit Growers Association of the Province of Quebec, are full of original matter, and extremely interesting during the last five years. We are pleased to state that the issue of 1880 is the best of the series. The article on "Forest Tree Culture," by the Hon. H. G. Joly, is just what we would wish to insert in our journal, and we have a peculiar feeling—not jealousy—when we cannot procure these profound investigations. Mr. Joly is a noble example of the son following the footsteps of his father. We have had the pleasure of being acquainted with the latter; it will suffice to say that in a scientific view one is the prototype of the other. Mr. Joly's experiments are well worth repeating. "Forestry in Canada," by A. T. Drummond, a gentleman who has devoted much leisure in promoting modes for

conserving our forests—is well worth perusal—it being well-timed, and we trust that the Government of Manitoba will see the utility of adopting Mr. Drummond's suggestions. We are highly delighted with the article on the "Native Plants of the Province of Quebec," by J. B. McConnell, M.D. The Department of the Interior should reprint the doctor's description of our plants in the next Report, and distribute them largely throughout Europe. This is just the kind of information required by Europeans. It gives at once a fair botanical view of this Province, and from which an easy comparison may be made between it and the Western and Northern Portions of the Dominion.—C.

Correspondence.

To the Editor of the CANADIAN SPORTSMAN and NATURALIST:—

FROM A CANADIAN SPORTSMAN IN FARGO, DAKOTA, U. S.

SIR,—Your welcome bunch of the CANADIAN SPORTSMAN and NATURALIST, came to hand in due time. I devoted a pleasant hour looking over what some of my old friends and brother sportsmen have been doing during the last two months in Canada. I suppose that although I am now in Dakota, I am still Canadian and a sportsman at that. I write this letter regarding sport in this portion of the Northwest. Fargoites have little time for pleasure, but we manage to get an occasional day. Three of us sallied forth, duly equipped, for one of the numerous sloughs near here. On our arrival we took up positions about two hundred yards apart, and sent our dogs (trained for the purpose) into the rushes to beat up the game, which occurred in countless numbers. Small flights of duck passed us almost all the time. I soon warmed up to the sport, and as there was a sharp wind blowing, I need not inform my duck-shooting friends (including Chris.) that it was no child's play to score a good average. I managed to keep my retriever busy, and uphold the honour of a Canadian gunner, as I scored the largest bag, expending the fewest cartridges of the party, who were no tyros. My bag was thirty-seven ducks to forty-four cartridges, and even you, hoary patron of sportsmen, must, I think allow that that was fairly good on a windy day.

In the afternoon we took a stroll across the country and shot prairie chickens, concerning which I have come to the conclusion that they are better eating than they are sport. We all succeeded in making ourselves tired and thirsty on this tramp, and were highly pleased to get back to our drag and a case of "Budweiser" we had in it. Any one not knowing what Budweiser is, let him refer to some one who has travelled west of Chicago; suffice it to say, it is a substitute for water, largely used by the inhabitants of this part of the world. I contemplate being one of a party going north to the Devil's lake, (so-called) for antelope shooting shortly. If I do make the trip and you care for such loose-jointed rambling notes for your spicily little journal, I will be very glad to give you an account of the expedition and its results, and may send you a specimen or two that I come across.

Wishing you all possible success,
I am yours, &c.,

WHISTLE WING.

ROBINS.

DEAR SIR,—I quite agree with everything your correspondent "Hammerless Greener" says respecting the unsportsmanship and cruelty and folly of killing robins. The tradition to which he refers as to the name "God's bird," dates further back, I think, than the legend of the Babes in the Wood. The tradition is "that while our Lord was on his way to Calvary, a robin pecked a thorn out of his crown, and the blood which issued from the wound falling on the bird dyed its breast with red." This tradition, however, of course refers to the English robin redbreast, and not to the Canadian miscalled robin. While up the lakes last week I captured a frog with a tail. The animal was 2½ inches, the tail measuring one inch. The tail is, of course, the tadpole tail, which from some cause or other, failed to become detached when the legs were developed. It has grown with the growth of the frog, and is about a quarter of inch wide at the insertion.

VINCENT CLEMENTI.

Peterboro', Aug. 29th, 1881.

NOTE.—The bird called robin in America, i. e., *Turdus migratorius*, has neither generic or specific connection or resemblance to the robin red-breast of Europe. Our correspondent quotes a curious, and to us unknown, phrase regarding God's bird, and we are anxious to know where he obtained the information. It

appears to us that there is an overstretch of history in the matter which is veiled in obscurity and we are anxious to see the quotations.

The tadpole form of frog is by no means rare in the vicinity of western lakes. The development of young frogs depends on the amount of warmth they receive during their early aquatic stages. The eggs or spawn are deposited in shallow semi-stagnant water, and the heat from the sun produces the tadpole.—C.

A TRIP TO RIGAUD.

On the 19th of last June a friend and myself anxious to avoid the heat of the city, left to enjoy a couple of days in the neighboring forests near Rigaud, a village situated on Rivière à la Graisse, said to be forty-five miles from Montreal. We obtained a boat and entered that river at its mouth, where it flows into the Ottawa river. In this vicinity we noticed kildeer plover (*Aegialitis vociferus*) in a ploughed field. The occurrence of these birds at this date indicates that the locality may be a breeding-ground; we, however, discovered no nests of the species. By crossing the Ottawa, we landed on Jones' Island, a part of which is cleared, forming a good farm. Passing through a patch of ferns, a woodcock was flushed, but we could not find its nest. A few days afterwards I met Mr. Jones, who informed me that he saw young woodcock, and he also said that about the 10th of May, a black duck's nest was found on the Island. The eggs of this duck (*Anas obscura*) were taken away and placed under a domestic hen, and they were hatched in due time, but the ducklings followed their wild nature, took to the water, and never to his knowledge returned to their foster mother. We enjoyed the scenery, and the exercise gave us vigour, but there was one annoyance to mar our pleasure; mosquitoes swarmed upon us, and we were obliged to leave the island sooner than we anticipated.—Woodcock.

Montreal, 27th August, 1881.

OUR FOREST TREES.

(CONCLUDED.)

CHOKO CHERRY; *P. Virginiana*.—A tall shrub or small tree. The wood is of no value, but the tree is very pretty when in flower and fruit.

HONEY LOCUST; *Gleditschia*.—This tree has been introduced from farther south, where

it often reaches a great size. Its graceful appearance and long, sweet pods make it an interesting tree. The wood is very hard, but is much worked by worms, and it is difficult to get good specimens of much size.

RED MAPLE; *Acer rubrum*.—This is also called the swamp or soft maple, and is a tree of middling size, growing abundantly in low grounds. The bright red flowers in spring, and the brilliant leaves in autumn, make the name Red Maple highly appropriate. It is not uncommon to see a single tree in a copse of maples, turning to a crimson or scarlet, as early as August, while all the surrounding trees remain green. This is believed to be a proof that the frost has very little to do with the autumn colors. The wood is whitish compact and firm, is well suited for turning, and takes a fine polish. It is much used for common bedsteads, and other cheap furniture. It is however not strong, and when exposed to dampness speedily decays. Authorities differ widely about the maples. Mr. Emerson asserts that the curled maple is a variety of the red, and the bird's eye, a variety of the sugar maple.

WHITE, OR SILVER MAPLE; *A. dasycarpum*. This rapid growing and handsome shade tree is abundant in western New England, but not common eastward unless planted by man. It reaches a good height, and forms a fine spreading top. The roots are believed to impoverish the soil around them by their long ramification. As intimated above, the wood is said by some authorities to be of little value, while others place it at the head of the maples. Its sap contains some sugar, but far less abundantly than the sugar maple.

ROCK, OR SUGAR MAPLE; *A. saccharinum*.—This noble and valuable tree often grows to a height of eighty feet, and when in early foliage and flowers, can scarcely be surpassed in beauty. South of New England it is more prized as a shade tree, though its slow growth detracts somewhat from its general merits. The wood is much used in cabinet work, being capable of a very fine polish. But it is as a source of sugar supply that this tree claims its highest value. There is good evidence that from 35 to 40 pounds of sugar have been made in one season from a single tree, and that a barrel of sap has been taken from one trunk in 24 hours. These are extreme cases. The average is from 12 to 30 gallons of sap or 3 to eight pounds of sugar from a tree in one season. This industry is one of the chief sources of income to New England farmers.

STRIPED MAPLE; *A. Pennsylvanicum*.—This pretty tree is seldom seen more than 12 feet in height, yet it occasionally measures twice that figure. In Maine it is called Moose Wood, the bark and tender branches being the favorite food of the Moose. The bark is beautifully striped with green and brown. The leaves are successfully applied to inflamed wounds and bruises but no use has been made of the wood.

STAG HORN SUMACH; *Rhus typhina*.—This tall shrub sometimes rises to the height of 25 feet and thus becomes a small tree. It is conspicuous in the autumn by its bright, red clusters of fruit, and its leaves of varied and brilliant hues. The leaves and bark are used in tanning, and the root has been found efficacious in fevers.

BASSWOOD; *Tilia Americana*.—This tree standing alone forms a beautiful and striking object in the landscape, from its regular conical outline and its rich masses of foliage. Its wood is soft and white, and of a fine close grain. It is much used for the panels of carriages and wagons, for bottoms and sides of drawers, for broom handles, and where pine is scarce, as a substitute for that in inside finishing work. It is also carved into bowls and toys, and its charcoal is by no means inferior.

A GENERAL DELUGE.

BY G. W. BROWN, M.D.

(From *Our Home, and Science Gossip*.)

A tradition prevails among all nations that a general deluge has inundated the world, and that the globe has been peopled from the east.

Without regard to the sacred writings of different nations, let us see if there is any probable foundation on which to predicate an opinion that a universal flood has swept over the earth, and destroyed all life which it contained, save such as was preserved in some miraculous manner for the perpetuation of the species.

It is well known to geologists that continents and islands have been frequently submerged by the ocean, and have as frequently emerged from their watery beds. It is on such a hypothesis alone we can account for the immense lime formations, with their fossil remains, lines of stratification, and other evidences of aqueous formation, extending over almost limitless regions.

The microscope reveals the fact that all our native coals, even anthracite and cannel, have a ligneous origin. They are the products of the immense vegetable growths of the car-

boniferous period, when the earth and temperature were especially adapted to the production of this form of life. By some mighty convulsion the continent on which they had grown sank below the sea level; the waters rolled over them with great force, prostrating the dense verdure. Each succeeding wave brought a fresh deposit of debris, which buried it deeper and still deeper beneath the ocean bed. The phosphate of lime, held in solution by the higher temperature of that era was precipitated by its reduction, in which are now found the fossilized remains of the moluscan and crustacean formations of that era, and adapted to its elevated temperature.

Again the bed of the ocean was elevated, and became dry land. Another growth of vegetable life followed, to be in turn submerged, as in the preceding instance, and then emergencies and depressions followed each other through long cycles, as numerous as different strata of coal are superposed one above another. The chemical conditions which prevent wood from decomposing under water, deprived of the oxygen of the atmosphere, to which were added immense pressure, effected its transformation into coal.

Volcanic eruptions, more grand and terrific than anything we have any conception of, in consequence of the then comparative thinness of the earth's crust, the interior heat of the molten mass beneath, and the denser atmosphere surrounding it, made the depressions and upheavals more frequent than through subsequent periods.

When the temperature of the surface was sufficiently reduced to admit of it, evidenced by their fossilized remains in the rocks, the earth was peopled with higher and higher forms of life, each emerging from lower forms, until, lastly, man appeared. Through the long and almost interminable ages that followed, his successors spread over continents and islands. Each was populated with such orders of life as was best adapted to its peculiar climate and productions. Thus animal life was adapted to the surrounding conditions, not the conditions to the needs of the animal, for it was of a later creation.

Those immense bodies of land, now covered by the Pacific, Indian and Atlantic oceans, sometime in the very remote past, were continents. At the same time much, and perhaps nearly all the continents of Asia, Africa, Europe and America, formed the beds of cotemperaneous oceans.

(TO BE CONTINUED.)