RECENT BIOLOGICAL DISCOVERIES IN CANADA

A new volume, entitled "Contributions to Canadian Biology, 1917," has just been issued by the Fisheries Branch of the Naval Service Department, Ottawa. It is of special interest to the readers of the BEACON, owing to the fact that a great part of the work was done by scientists at the Biological Station at St. Andrews. In addition to the institution conducted by the Government here, there is a Biological Station on the Pacific coast near Nanaimo, and the reports included in the new volume embrace work done at both stations, but, of the sixteen reports now published, only four cover work done elsewhere than in this locality.

The pages of the volume are all of great practical importance, and many visitors to St. Andrews will remember that, for two or three seasons, technical experiments were carried on, upon the curing of haddock and other fish, at Brandy Cove. The results of these experiments were highly successful, and specimens of "finnan haddock," prepared by the scientific staff here, were tested by a numbes of experts and pronounced the best fish of this kind ever produced in Canada. The curing was carried out under very scientific conditions as to time of cooking, quantity of brine and smoke, and time of smoking, and Dr. Olive Patterson, Toronto, who mainly carried on the work, now presents a report in which she summarizes her methods and results; while Principal Harrison, (Macdonald College), gives a short technical report on the bacteria which must be guarded against, if haddock, cured or uncured, are to maintain their condition.

Another practical paper of very great commercial importance is by Dr. Sadler (McGill University) on the "Causes of Spoiled Canned Sardines." It is shown by elaborate experiments carried on at St. Andrews that what are called "swelled cans" are caused by bacteria. The discovery of the cause is the only means of finding the remedy, and it appears that two kinds of bacteria, a short thick rod-like one, and another which is rod-like but three times as long as it is broad, are the chief sources of harm. The author unfortunately was not able to discover where the organism arose, but means of combating the evil are not difficult when science has revealed the cause.

Dr. Huntsman and principal Harrison report on some specimens of diseased salmon sent to the Biological Station from the Miramichi River, and, while their reports are very technical, it is clear that the cause of the disease is probably of a temporory character, and must pass away with an improvemeut in the vitality of the fish. Fish in a weak condition are affected by this trouble, which Dr. Harrison declares is not the well-known salmon rungus, nor is it the Scottish salmon bacillus. Fortunately the disease is not transmitted by the eggs, so that the hatcheries can not be the means of continuing the trouble. No doubt the epidemic, which was so marked in 1915 and 1916, and which had not previously occurred, will disappear as rapidly as it appeared.

Professor Knight, Kingston, Ont., who has for many years carried on lobster investigations, presents a complete report of his work in the Bay of Fundy three years ago, and confirms the opinion rxpressed by many fishermen that a very small percentage of lobsters carry eggs. He states that by confining the lobsters together in an area, such as that constructed by the Government in St. Mary's Bay, a very much larger percentage of lobsters are found to carry eggs and hatch them out.

A most important paper is that by Rev. Father Vachon (Laval University) on the physics of the waters around St. Andrews, and his results are supplemented by those of Mr. A. H. Craigie, Toronto, and Mr. W. H. Chase, (Acadia University), who three years ago carried on "temperature," and other observations, out in the Bay of Fundy with results which are of a most striking character. The temperature in the Bay is very constant from five fathoms to the bottom, due to the complete tides, and the mixing of the tidal waters, but there is a very cold tongue of water penetrating the middle of the Bay.

Dr. E. M. Kindle reports on the distribution of that destructive little animal the ship worm (Teredo), which occurs abundantly all along the shores of Cape Breton, Prince Edward Island, and the south shore of the Gulf of St. Lawrence, but is fortunately absent from the Bay of Fundy, and the shores near St. Andrews. Unfortunately there is a shrimp which takes the place of the Teredo in many localities, but where the ship worm becomes numerous, the shrimp become scarce. The Teredo accomplishes its destruction of wooden wharves, submerged piles, boats, etc. very quickly, as is shown by a plate from a photograph of a beech log at Charlottetown, Prince Edward Island, which was thoroughly honey-combed in the short period of eleven months. Dr. Kindle describes conditions under which Teredo occurs, and suggests some remedies.

Dr. James Mavor, (Schenectady, U. S. A.), continues his report on the "Age and Growth of Fishes in the Bay of Fundy," and his remarkable results on the "Pollock" furnish most interesting reading. He studied no less than 2,387 specimens of these fish at St. Andrews, and determined the size in the second, third years, etc., up to the seventh year.

Drs. Kindle and Whittaker, (Ottawa), publish a remarkable list of over one thousand marine animals which occur from St. Andrews round to the St. Lawrence, and determined their distribution at various depths from high water mark to a depth of 100 fathoms. It is a most important list, and will be of great value to all naturalists and collectors in future. Their reports embrace a vast amount of work.

The report on "Pearly Mussels in Ontario," by Mr. Detweiler, of Toronto, is of special local interest, because Mr. Detweiler worked, for some years, at the St. Andrews Station on Marine zoology. His report on fresh-water mussels is not only of interest because Canadians have never realized that a valuable pearl fishery is possible in our streams and rivers, but because pearly mussels are very important in the button industry. The author shows that these mussels, when very young, attach themselves like parasites to fresh-water fish, and the discovery of this fact points the way to a system of pearly-mussel culture, which has proved of great commercial value in the United States, and awaits development in Canada.

Of the whole series the report which in some respects will attract most general public attention is an important account of the sea-lions in British Columbia. Three Commissioners were appointed by the Biological Board to inquire into the alleged injury to the British Columbia salmon fishery by sea-lions. These splendid animals, which range from seven to ten or eleven feet in length, have selected a number of rocky localities on the British Columbia coast as rookeries. On some of these rookeries resorts it was estimated, some years ago, that the sea-lions numbered many thousands. Indeed, the total number was estimated at 11,000 in 1913, but this number was probably exaggerated. On some of the rookeries the sea-lions have been exterminated; the killing of them being stimulated by a Government bounty of $2.00 for each muzzle of a slain animal. No less than thirty beautiful half-tones illustrate this report, and some of them show the kind of injury which these animals do to the fisheries; figures 34 and 35 showing a number of mutilated salmon alleged to have been injured by the sea-lions. The Commissioners concluded that much injury is done to valuable fish by sea-lions, but there is no necessity for exterminating them, especially as valuable oil, leather, and fertilizer, might be obtained by creating a sea-lion industry. They suggest official control and conservation of the sea-lions. A certain number only to be killed each year will remove all danger, and avoid the total destruction of this interesting marine annimal.

It only remains to add that the Chairman of the Biological Board, Professor Prince, prefaces the volume by a summary of all the sixteen reports, so that the ordinary unscientific reader call tell at a glance what the main points are in each report.

Such a publication as this testifies to the admirable work being done by the staff of eminent scientific workers, whom we are glad to welcome to St. Andrews, year by year, and testifies to the heavy and responsible labors of the head of the Biological Board, ably seconded by Professor Macallum, who encourage all workers to come to the Station and engage in biological work by the example of their own zeal and earnestness. St. Andrews is unique amongst the summer resorts in Canada in its midst so important a school of research as the Biological Station.

THE SOLITARY GRAVE

UPON the farm he loved so well,
Looking across the acres wide,
Where wild flowers bloom and sunshine streams,
They laid his body when he died.

He lived apart from marts and men,
And knew the friendliness of trees,
The broad companionship of skies,
And the caresses of the breeze.

His kin might lie in silent rows
Crowded together, near a town,
But he would sleep where he had lived,
As the seared leaf drops softly down.

And so in sunshine and in rain,
And when at eve the night wind sings,
His dust commingles with the life
Of sweet, familiar, growing things.

—ELISA VAN WYCK.

CASUALTIES OF BRITISH INCREASE

London, Aug. 28—British casualties reported in the week ended to-day totalled 14,484, compared with an aggregate of 8,411 reported in the previous week. The casualties are divided as follows:

Killed or died of wounds—Officers 387, men 2,194.

Wounded or missing—Officers 1,110, men 10,793.

"Who is this gentleman?" "A celebrated explorer. He has visited some of the world's remote spots." "I judged so. He was telling a friend just now about spending three days in Keokuk, Ia."—*Birmingham Age-Herald.*

LORD SHAUGHNESSY AT THE TORONTO EXHIBITION

Toronto, August 26.—Lord Shaughnessy president of the C. P. R., officially opened the Canadian National Exhibition here today, launching the great fair upon its fortieth anniversary.

Following the presentation of an illuminatcd address by Mr. Thomas A. Russell, on behalf of the Exhibition Association, Lord Shaughnessy pressed the button that set the wheels of the exhibition in operation for the next two weeks. This is Opening and Veterans' Day at the great fair.

Lord Shaughnessy was tendered a civic welcome and greeted by His Worship Mayor Church.

Later Lord Shaughnessy was the guest of honor at the Exhibition Luncheon. The ceremony being held in the amphitheatre of the Dairy building.

The address read as follows:

To Lord Shaughnessy:—

It is most fitting that the opening of the forty-first annual exhibition is by you, Sir, for your thirty-six years of service in the great transportation system over which you preside, is almost concurrent with the life-history of this exhibition.

In coming as you did to Canada to assist in the building of the first railway connecting the East and West of our country, you have played a large part not only in unifying the provinces of Canada into a nation, but in uniting her more closely to to the Motherland and to the overseas Dominions.

Within these grounds, you will see evidence of development and progress in almost every activity of this young nation. In the many demonstrations will be found valuable lessons of increased production and of greater conservation of our natural resources; in the exhibits of the work that is being done with returned soldiers and in our model camp and elsewhere on every hand you will see eloquent evidence of the way in which the nation to a man—and to a woman—is lending its support to the prosecution of the war.

Canada is confronted to-day with problems more far-reaching than ever before. These call, first, for the most earnest and efficient mobilization of all resources, both human and material, for the successful prosecution of the war; and, secondly, for the exercise of great courage and high patriotism in meeting the conditions which must soon be faced on the farms, in the factory and in the homes, when the country turns from war organization to the pursuits of perce, and the tremendous readjustment begins to take place. To you, in this epoch-making time—we turn with confidence for counsel and leadership.

We hope, Sir, this occasion will, in a small measure at least, let you see that the people of your adopted country are not unappreciative of your great service to Canada, and we trust that you will long be spared to give her the benefit of your wise counsel and ripe experience.

Baron Shaughnessy in reply said: "Mr. President, I may say that it gives me the greatest pleasure to be here today and take part in the official opening of the forty-first Canadian National Exhibition, an institution which the Dominion of Canada is justly proud of, and Toronto in particular has every reason to boast over.

"Next year, I understand, you are looking forwark to it being 'Victory Year,' and I earnestly trust your hopes in that respect will be fully realized. The news of great victories which have been gained and are being gained at the present time are most gratifying to us, and all Canada feels proud of the fact that her soldiers have taken such a gallant part in this great war. We are now safe in predicting the annihilation of the German offensive, and that the offensive will be with the Entente allies till the end of the war. We were always sure of victory, but we could never heretofore be sure of the time it would take to attain it. The rift is now in the clouds, however, and we are justified in believing that the end is in sight. In such contemplation we, however, should show no relaxation in our efforts, but carry on with all possible earnestness until victory is finally and surely won.

"Then will come peace, and with peace will come greater responsibilities, and quite different from what we have borne during the course of the war. The demobilization of our troops, care of the wounded for all time, the reinstalment of our heroes in civil life, and many other problems have all to be faced. Nothing must be neglected which science or skill can accomplish.

"Some of the men will, no doubt, want to go on to the land, but I look for the majority desiring other occupations from those in which they were previously engaged. There life in the open air and the broadening of their minds, which must have taken place during the war, will no doubt induce them to look for new spheres of labor. The Government and individuals must all see that the men who have sacrificed so much for our freedom and safety must be given every consideration when it comes to them being re-established in civil life. Manufacturers and leaders of industries will have to play a large part. The release of so many from munition works, the larger facilities we have, and the increased skill of workmen because of the accuracy they have learned when engaged on war work, will all tax the resources of our country. To meet this we have our great wealth of raw material. Our forceful and intelligent people should enable us to cope with all and to hold our own, not only in our own markets, but those of other countries as well.

It will be necessary to establish a good relationship between employers and employes, and a unity all round for the commonwealth. Everything that will enable us to overcome all difficulties must be closely studied, and where changes are necessary to meet conditions we may be relied upon to make them without delay."

His Lordship then wished the Exhibition a great success, touched the button, and, with the band playing the National Anthem, the official opening was at an end.

THE FINAL ASSAY

PERCHANCE some grains of gold among the sand
Of my bleak desert tailings may be found;
Perhps some diamonds in the barren land
Of all my failures may enrich the ground!
But have I gold enough of all my strife,
Or jewels rare, to frame a Crown of life?
The Goldsmith of Eternity must wrest
The ore untarnished from the dross of earth;
The Lapidary of the Skies will test
Each shining stone and estimated it's worth!
Happy my soul, if in the reckoning,
Is found one jem to tip its golden wing!

TEASDALE RANDOLPH

A HAND BOOK FOR DAIRYMEN

Report No. 10 of the Canadian Record of Performance for Pure-bred Dairy Cattle constitutes a hand-book that dairymen can hardly do without. It contains the rules and regulations governing the records of performance; the standards for registration; the records of performance of all pure-bred dairy cattle in the country, convenient summaries of reports exact details of the records achieved, and the addresses of the owners; a record of the cows that have produced sufficient milk and fat to qualify but have failed to freshen within fifteen months after the commencement of the test; a list of bulls open to registration, and an index to owners. The whole forms a valuable and concise book of dairy records that can be had free on application to the Publication Branch, Department of Agriculture, Ottawa.

"Yon must remember that everybody makes mistakes." "Of course," replied Senator Sorghum. "The problem is to avoid wasting too much time and money on them."—*Washington Star.*