ATLANTIC BIOLOGICAL STATION

I N much the same spirit that weary meditation, uninterrupted study and com- been actually drawn into the war.

work is to ascertain whether there is a nutriment of the fish. the rings in a cross section of wood gives been found that the total salt content of immune to this treatment. Good tins of ring have been cheap. Now they are 22, 1916. the age of a tree. Fish differ from human water is always in a definite proportion beings in that they are practically all born or spawned at the same time of the water. Samples of water have been taken year. Another difference is that fish in various localities every week or every continue to grow practically throughout month throughout the vees. continue to grow practically throughout month throughout the year. They were their whole lives, while the human taken at different depths and in as many population reaches physical maturity at cases as possible results were obtained

rise later to a heavy harvest of fish of store of bottles, rows and rows of bottles that year's "class" or age. Thus, suc- that resolved themselves into square feet cessful years are often caused by the of bottles that opened up the possibility When the fish of a certain age are being like its fellows and no one any more gincaught there follows a period of scarcity ger ale bottle than any other. For each until the offspring of these abundant fish bottle the professor performs the same the nature of the fish population through long summer days with an unending rea number of years it is possible to predict petition, and his notebooks with the

and in which years a scarcity of fish. fluctuations in the fisheries. But there is also the question of fish diseases to be to date. In the one, which is situated at diseases do not attack fish, but is an open flows down. The other, situated in the question as to whether it will be possible to control these epidemics in the same completed another summer's work, he way as human diseases are checked. looks for interesting comparisons be-Dr. Mayor has confined this phase to the tween one year's results and the next.

in Canadian waters can hardly be over- wards survey, similar to that of Dr. McMurrich, on this far-reaching question that Dr. was organized by all the countries border- Burke has commenced his exhaustive ing on the North Sea, to classify the studies. was fairly under way, but from then of time certain chemical changes take was fairly under way, but from then of time certain chemical changes take until the outbreak of the war a very exhaustive study was made and records of utmost value were compiled. The North Sea area was divided among the neighbouring countries, Great Britain uses. Autolysis is recognized to deprive meat of some of its nutriment, as if it had been already and the seasons. and Holland co-operating in the work, processes of human digestion. Autolysis

it empties into Passamaquiody Bay, the little settlement clusters together half hidden among the trees.

The Biological Station, which is under the jurisdiction of the Department of Marine and Fisheries at Ottawa, was built some eight or nine years ago. At first the research work was carried on in a houseboat that was moved from place to place, Malpeque, Gaspé Bay, and other districts in the Gulf of St. Lawrence. Finally after considerable wandering it was decided to locate the permanent station at St. Andrews so, the predominates, and also that certain step or fifteen Canadian, scientists, mostly professors or teachers from unific problems connected with the fisheries. The greater part of the work is carried on the product of the progression of the surface of

with many specimens and resolutions for continuing their studies throughout the winter. Most of the work is done gratis, except for actual expenses which are defrayed by the Government.

Dr. A. G. Huntsman, of the University of Toronto, the permanent curator of the most of the permanent curator of the here. She goes on to determine the diatoms for district that makes a thorough the diatoms fritz is engaged in classifying the diatoms found in the tows. Dr. McMurrich devotes fish a time of structure public at large who eat these fish—a time of sardines is very liable to putrefy and swell. This is often a great loss to the diatom family, but these Miss Fritz has classified more minutely into fifty different species. But her work does not end here. She goes on to determine the diatoms family and the diatoms for the diatoms family and the diatom family and the diatoms family and the diato

year, and the object of this branch of the diatoms form one of the main sources of about 21 years. Thus the age of a fish at 10 metres under water, 20m., 30m., can also be told approximately from its 40m., 50m., 75m., 100m., 125m., 150m. and 175m., respectively. Thus, on his In particularly favorable years a great arrival at the station this summer Father many fish are spawned and this gives Vachon found awaiting him a goodly

abundance of fish of a certain age. of cubic feet of bottles—each one exactly have grown to maturity. By studying pretty chemical experient, filling the in which years there will be an abundance, combinations and permutations of the numbers from 35 to 37 carried to two This is one of the chief causes of decimal places. Father Vachon has now considered and their effect on the fish the mouth of the river St. Croix, the population. Dr. Mavor has determined salinity increases in the winter when the that except for far-reaching epidemics, river freezes and very little fresh water

Dr. Mavor has commet this phase to the University gadoid species, cod, haddock, pollock and hake.

Dr. Chas E. Burke, of the University for Vermont, has undertaken a study For nearly three years Dr. J. Playfair which promises to be of primary import-McMurrich, professor of anatomy at the ance in solving the great question of food University of Toronto, has been engaged distribution. Since the commencement in a comprehensive study of the minute- of the war, foodstuffs have played a part organisms found in the waters adjacent that has become more prominent each to the station. All water is teeming year as the means of transportation have with life on which the fish feed directly been intercepted and existing stocks or indirectly. Either they consume this "plankton" or they feed on creatures taken up on all sides and every feasible which live on it. Therefore, the importance of an exhaustive survey of the varieties and abundance of animal life existing. The general feeling of antipathy toestimated from a point of view of obtain-ing basic knowledge on which to build further experiments on the habits of fish. To emphasize the value of a study of through their annual food crisis. In this kind, it is only necessary to turn to turn these companies look to the scienthe work that has been carried on by tists to help them bring their task to a European scientists. In 1902 and 1903 a state of greater efficiency. It is precisely

animal life found in those waters. It It is a well-known fact that when mea was not until 1908 or 1909 that the work is placed in cold storage for any length ndertaking her share, France, Belgium been already subjected to some of the while Germany, Denmark, Norway, does not occur to any extent in eggs, and Sweden and Russia completed the list of the question arises whether it has a deteries interested. Russia explored lorating effect on fish, and if so how

the nature of the waters of the Artic may best be prevented. Experiments sardines are again being innoculated with becoming too dear for this purpose and

The greater part of the work is carried of nsh.

The work of Miss Clara Fritz of McGill on during the summer holidays, but it is on during the summer holidays, but it is rare that these devotees of the cause of science do not depart in the autumn laden with many specimens and resolutions for being made by Dr. McMurrich. Miss known to fish wholesalers—although the lit is with the object of tracing some of Fritz is engaged in classifying the diatoms.

the micro-organisms involved. continuous decrease of fish in Canadian waters, or a decrease for a few years der Vachon, of Laval University, Quebec, ering where the bacteria which cause this object of her studies is to find out whether penitentiary received a wire from the collowed by a corresponding increase. is also basic in character, designed to swelling come from and how they may be these shellfish occur in sufficiently large In the same way that a statistician form a foundation for further experi- avoided. He is now concentrating his quantities to make them of commercial studies the population of a country, noting the age of the inhabitants, Dr. Mavor of fish. Dr. Vachon is determining the

efforts on the canning process as employed at the factories. The sardines, after industry would be a profitable investment. they have been sealed in the tin, are st gating the length of their life and the Bay and the Bay of Fundy. By the jected to 129 deg. Centigrade of heat for Scotland, and this phase of the work is mating \$1,000,000 in connexion with the causes of their death. The age of the chemical method of titration he is able an hour and a half, in order to kill all the not being overlooked by Miss Mossop. fish is determined from the number of to ascertain the amount of common salt micro-organisms contained. Apparently "The local fishermen have hitherto used Buildings, on which he had the contract rings on the scales in the same way as or sodium chloride in the water. It has the bacteria that cause the swelling are herring as bait," she says, "but then her- He entered the penitentiary on Novem

souls retire to a religious retreat for the majority of these scientists have summer on fresh fish. He disinfects his bacteria is of a more general nature. mussels can obtain sufficient nourishment. been actually drawn into the war.

Samples with toluine to prevent the Each and every weir in this prolific herdevelopment of bacteria, which reduces ring district is visited and samples are way, and Miss Mossop emphasizes the munion with kindred minds, scientists made by Dr. Mcmunion with kindred minds, scientists
flock from far and near to the Atlantic
Biological Station at St. Andrews, N. B.
Charmingly situated on a point of land
jutting out into the St. Croix River, where it empties into Passamaquoddy Bay, the little settlement clusters together half hidden among the trees.

The investigations made by Dr. McMurrich in the St. Andrews district since and samples are the chemical action simply to that of brought back. Bacteria are taken from different parts of the intestinal tract and autolysis. Experiments are made with general character to the results obtained by the European scientists. Tows are taken at a number of specified localities in this vicinity, either once a week or once a month, as the case may be, throughout the year. For this purpose

of Toronto, the permanent curator of the station, is conducting an expedition to investigate the fisheries in the Gulf of St. Lawrence, and in his absence Dr. J. W. Mavor, professor of zoology at Union Ollege, Schenectedy, is in charge, An investigation into the fluctuations of the fisheries was commenced some for the fisheries was commenced some for years ago by Dr. Mavor. The fisheries differ in quantity from year to fisheries differ in quantity from year to fisheries and the object of this branch of the micro organisms involved.

Mr. Sadler to make a thorough investigation into the station with regard to determine which varieties predominate, at what seasons of the year they are most prevalent, and how deep in the water they grow. Her laboratory experiments also show that certain species may be cultivated in much greater numbers than they focur in the sea. Her results promise to fisheries differ in quantity from year to fisheries of the micro organisms involved.

An investigation into the fluctuations of the station with regard to clams and mussels is under the care of winnipeg Parliament Building contractor, Miss B. K. Mossop, of the University of work, he has proved that certain species work, he has proved that certain species may be cultivated by invertication and swelling. By inocular in the sea and mussels is under the care of winnipeg Parliament Building contractor, Miss B. K. Mossop, of the University of Winsipeg Parliament Building contractor, Miss B. K. Mossop finds gradient of the station with regard to clams and mussels is under the care of Winsipeg Parliament Building contractor, Miss B. K. Mossop, of the University of Winsipeg Parliament Building contractor, Miss B. K. Mossop finds gradient of the station with regard to clams and mussels is under the care of Winsipeg Parliament Building contractor, Miss B. K. Mossop finds gradient of the station with regard to clams and mussels is under the care of Winsipeg Parliament Building contractor, Miss B. K. Mossop finds gradient of the station with rega The work of the station with regard to toba Penitentiary of Thomas Kelly, the the micro-organisms involved. quantities found in a given area. She is on parole yesterday after serving nine

This summer his work lies in studying also studying the rings on the shells to months' of a two and a half year term.

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coast, and Denmark studied the Icelandic must be made with smoked, pickled and the bacteria and subjected to varying it may be that the use of mussels will shores. Unfortunately the work is at a standard of standard it is lnecessary to set up a standard of co-operation is impossible under warring conditions, quite apart from the fact that

KELLY HAS BEEN RELEASED

the order for the release from the Mani

construction of the Manitoba Parliame

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owned that we have be many ways, little and big. we have pared the pota unsparing a knife—at leas days before potatoes beca other precious things of ground, gold and rubies

WISE AND I

W E are hearing a lot

practice of the thing it known. And yet, as a n

ECONON

and we have used butte spoon to shorten dishe themselves have been " new clothes when the have been made to look the new, and we have more leather in our shoe lutely necessary. I paper suggests editorially s-whoever could enough to pose as suchthe fashions, because " pockets that have feature this year and the high t footwear not only repre millions of dollars, but use of material that is se war purposes." O Statis generalities are quoted The queer thing about th it is that, as every wor have to pay almost as mu pumps as you do for boo paid exactly the same sur quite high uppers and for upper part at all. But needed for the army, I a perfectly willing to have abbreviated. I do not i or pique pockets would out much, and anyhow th material left in the cutting part of the costume. I woollen goods are at a "volumiuous" pockets pensed with in our fall fashion designers say.

now compute how many

lars might be saved by

futile belts from the coat

young men devotees of w is called the "pinched ba how many thousands of good material might be ti war purposes. It is fu men are to see the mote eye without being conscient their own organ of significant to get back to our oney. It would be into "economy." Some app doing without things is money; others, as buying cheap in price; others, a you have on hand bef thing more, and so on. I once heard a parent spring to "eat up all on leave anything to be things simply to keep t wasted is not exactly cost of living has tended too-full plate, but it disappeaaed yet. Often the family takes anoth another piece of bread there is one left on the sure, we make a point of overs, when there are course, is quite the ri provided the left-over c again without the additi pensive ingredients. nagazines' recipes for stale bread, for exampl ding, " adding six eggs, half a pound of raisins citron, etc." On the oth economist sometimes chief object of food rishment and bulk a but in attaining the latt expense the power may

being somewhat overlood good deal about "sul meat-less, or egg-less, it is well to remember has too many ingredie acoction is likely to less dish, in point of n careful study of food va tions is necessary to a the substitution of less instead of the high price is less difficult in the nature has provided veg and variety, and the pro

garden or the successf vacant lot is fortunate. Some household food to proceed on the "feas They cut down on the b lessly for several meals appetite rebels and ca thout a meal whose ' than balances what w the meagreness of the and that without such better economy to provof a nourishing kind a guarding against waste watching the markets s reference to season, su