

# BIOLOGIST BY ACCIDENT

*Broken Elbow Made A. E. Hefford A Research Student*

THE day after A. E. Hefford had retired from his job as Chief Inspector of Fisheries we telephoned him, suggesting an interview.

"Oh yes, we could have a little chat," he said. "What would you like me to talk about—Cod I Have Known?"

That, we thought, would be a useful idea with, perhaps the addition, "Herrings I Have Met." But the first thing we found out was that had it not been for a broken elbow and a damaged right hand he would never have become Chief Inspector of Fisheries.

He was a youth when he had the accidents. Unable to take much of a part in games, he bought a sixpenny treatise on botany and a fourpenny book on geology and amused himself with long rambles in Leicestershire, eventually taking up the study of marine biology. Then he went to Lowestoft for his first researches and later joined the staff of the Marine Biological Laboratory of the United Kingdom, with headquarters at Plymouth.

## Cigars at a Penny

One of the most interesting aspects of this work, he told us, was the keynote of international collaboration. Many countries were represented and there was a striving for co-operation rather than competition. Mr. Hefford spent some of his early days in Holland, where he learned the advantages of cigars and beers at a penny apiece. And he came to have a very high regard for the Dutch character.

Investigations into the salmon rivers and shell fisheries of England and Wales were among his first jobs and, in 1914, when the first world war came, he was busy attending to the hatching of lobsters in an estuary in Hampshire. Here the sea flowed almost into the New Forest whence the timber came to build Nelson's flagship.

Then the Government of Bombay wanted to know more about its fisheries, so Mr. Hefford was seconded to its service. He used a trawler named the William Carrick, a former minesweeper. At the time there were 276 sweepers at work, each bearing a name taken from the roll-calls on Nelson's Victory. All sorts of queer fish came into his nets in Indian waters. One, a "wam" (pronounced WAHM) left its teeth marks on his arm. As he was flinging the fish, something like a conger eel, on to the deck, it turned round and bit him like a dog. That and malaria were the only troubles he met with in his many years of marine investigation.

## Catching and Selling

"When I was in the Bombay service, from 1920 to 1922, it was the time of post-war depression. The Government, compelled like others to be frugal, told me and my crew to catch fish and sell them instead of putting in time on research. Under that particular Government, the natives were given more representation on the councils than formerly,"

Mr. Hefford said. "The Minister of Industries was a Hindu Brahmin who, a complete vegetarian, would not dream of eating fish. So he was not over-enthusiastic about developing the fishing industry."

The William Carrick's crew was largely Indian. "I liked those chaps, though they were always going down with malaria and tummy troubles and I had to doctor them," he said. "Another job was trying to keep the peace among the warring factions. And I soon found that one European could do the work of three Indians."

## Roads Killed Fish

His job in India completed, and official reports written, Mr. Hefford returned to England to do fresh-water work. The motor-car age was then well developed and with it came improved roads. Tar-sealing was the first method and river-fish died in their thousands. The coal-tar washed into rivers by heavy rain was found to be a deadly poison, so the Ministry of Agriculture and Fisheries set up a laboratory to study the effects of various road materials. Soon the use of bitumen was made compulsory, as it has no deleterious effects on fish life.

"I have never heard of that sort of trouble in New Zealand," said Mr. Hefford, "probably because in a great many cases the road area in relation to river water volume is small compared with England."

"Very little work has been done in England in fresh water biology up to this time, but a Freshwater Biological Association of the British Empire, with headquarters at Windermere, has now been established. And let me digress for a moment to tell you that it has an association with New Zealand. A young girl from this country went to that laboratory. There she met a young English biologist, married him and induced him to come to New Zealand. I won't mention his name, but he is now one of our prominent freshwater biologists."

## Nansen's Invitation

During a visit to Bergen, Mr. Hefford met Nansen, the explorer. "I often re-

gret that I did not accept his invitation to go with him on a ten-days' research trip. But I felt it incumbent on me to get back to England, having finished my work. Nansen was not only a man who set out to find the North Pole, but also a great marine biologist. He was one of the first to realise that living things in the sea are dependent on the physical characteristics of the waters. And his Fram expedition was mainly intended to demonstrate his theory about the drift of ice from the Pole to the lower latitudes."

When he came to New Zealand in 1925 Mr. Hefford was given the title of "Fisheries Expert." "And I had to live up, or down, to that," he said. "I knew a bit about the North Sea and Arabian fisheries, but very little about New Zealand fish: In those days the fisheries branch was more or less a one-man show, but it developed."

## Saltwater Census

"How far do the fish extend from the New Zealand coasts?" we asked.

"Our good and payable grounds are merely a narrow fringe round the islands. We have no Grand Banks or North Sea here, and our fish just nose round the shores. Probably 99 per cent. are caught in less than 40 fathoms' depth."

"Are you able to estimate the quantities available for catching?"

"We can't muster them like sheep, of course, but we can take a sort of census of our fish population. Samples are selected from catches and we determine their ages from the scales and ear-bones. We find out if the stocks consist of old, middle-aged, or juvenile fish. If there are plenty of old ones, then the ground has not been over-fished; if they are all small, over-fishing has taken place. Assessing the effect of fishing operations is one of the department's most important jobs."

"Originally it was thought in New Zealand that there were plenty of fish round the coasts and we merely had to catch them. But preventing people from catching too much and doing it too quickly was the real problem. They were too apt to 'pick the best and waste the rest.' The attitude was something like that shown towards the forests and bush in the early days; they were cut into and wasted. When I came to New Zealand I did not hear the word 'conservation,' but now, fortunately, everybody has heard it and some appreciate its significance."

"Since coming here have you noticed any big developments in fishing methods?"

"Oh yes. But when I arrived the Danish seine-net system had just begun in Auckland waters. This—and at the time I was pleased to see it—allowed small boats to compete with steam-trawlers. But it became clear that using seines on limited grounds was really too efficient. So, in areas in the Hauraki Gulf and elsewhere, seine fishing was prohibited."

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