

## CHAPTER I

## LIFE IN NEW ZEALAND

Ernest Rutherford was born on 30 August 1871, at Spring Grove, later called Brightwater, thirteen miles south of the town of Nelson, in the northern part of the South Island. The house has been pulled down, but there is a reproduction of it, in its derelict days, overleaf. His grandfather George Rutherford was a wheelwright at Perth, Scotland, and was engaged by Captain Thoms to migrate to New Zealand in order to erect a mill at Motueka. The whole family sailed in the *Phoebe Dunbar* from Dundee in 1842, and one of the sons named James, then aged three, was destined to be the father of Ernest.

About 1855 a widow named Caroline Thompson, with her little girl Martha, aged twelve, left Hornchurch, Essex, together with Caroline's parents, the Shuttleworths, and landed in Auckland after a long voyage in the sailing ship *Bank of England*. From Auckland they sailed in the brig *Ocean* to New Plymouth, on the south-west coast of the North Island, and remained there until trouble with the Maoris caused the women and children to be sent to Nelson in the South Island, and finally it happened that on 20 April 1866, Martha Thompson, at one time a school teacher, was married to James Rutherford.

In 1875 the Rutherfords moved ten miles to Foxhill in the same district of Nelson. A large family was born, seven sons and five daughters. One boy, Percy, died as an infant. Two boys, Herbert and Charles, aged nine and eight, were drowned in Pelorus Sound when sailing with an older boy of another family. The four sons who grew to manhood were George, Ernest, James and Arthur. Ernest was fourth child and second son. The names of his sisters were Nellie (Mrs M. P. Chapman), Alice (Mrs A. T. Elliot, deceased), Florence (Mrs H. G. Streiff), Ethel (Mrs H. G. Sergel) and Eva (Mrs L. T. Bell).

Rutherford's father, while at Foxhill, earned his living as a wheel-

wright, by small-scale farming and by bridge-building or contracting in connection with the railway under construction. He was a man of great energy, very straightforward, reliable, versatile and much liked by all classes. The mother valued education, could play the piano, was thrifty and hard-working.

At the age of five Rutherford was sent to the primary school at Foxhill where, with great good fortune, he was under a fine man and able teacher, Mr Henry Ladley, who taught Ernest as far as the fourth standard and should “get the credit due to him for starting the great man on his way”. This remark is due to Mr R. Cameron of Seddon who recorded that “some years later at a social function Rutherford pointed out how his parents had sacrificed, how they had gone without many comforts, so that he might be educated, so that he might have a chance, adding ‘I should never have been where I am today if it wasn’t for my mother and father’”.

Rutherford’s mother preserved a small science text-book with his name in it, and a date which shows that he was then ten years old. The book was written by Balfour Stewart, Professor of Physics at Manchester, and the preface lays down the very principles which Rutherford followed in his career:

This book has been written, not so much to give information, as to endeavour to discipline the mind by bringing it into immediate contact with Nature herself, for which purpose a series of simple experiments are described leading up to the chief truths of each science, so that the powers of observation in the pupils may be awakened and strengthened.

We are fortunate in having many sources of information about the early days of Rutherford, collected by friends and relations and by those who were at school or college with him. We are specially indebted to Prof. Coleridge Farr, F.R.S., of Canterbury College, New Zealand and to Dr E. Marsden, now Secretary of the Department of Scientific and Industrial Research, formerly a distinguished research student at Manchester with Rutherford.

In 1882 the family moved by boat to Havelock at the head of

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Rutherford's grandfather



Rutherford's birthplace



Rutherford's home at Foxhill

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1882]

SCHOOL DAYS

3

Pelorus Sound. James Rutherford set up a flax-mill where he prepared the native flax growing in neighbouring swamps. He also erected a saw-mill where he cut railway sleepers from the black and brown birch, and these were shipped to Lyttelton by sailing ships, so that sometimes a dozen of them together made a fine sight at the head of the Sound when held up by adverse winds. Ernest Rutherford now went to Havelock primary school and again came under the influence of an enthusiastic teacher, Mr Jacob H. Reynolds, who taught Latin to some of his pupils for an hour each morning before ordinary school work began; with the result that Rutherford, aged fifteen, won a fifty-guinea Marlborough Educational Board Scholarship, with the remarkable record of 580 marks out of a possible 600. This award enabled him to go to Nelson College where he was at once placed in the Fifth Form.

Nelson College was a good school, run on English public-school lines. The headmaster was a notable man, W. J. Ford of Repton and St John's College, Cambridge, who had been for many years a house-master at Marlborough. He was a genial character, a good classical scholar and a great cricketer. A man of outstanding height and weight, he was a great 'slogger', and few men, if any, have hit a cricket ball farther and higher. It was not possible to catch out a man who persistently hit the ball over the boundary.

Rutherford recalled a story of a day when Ford had a cricketing friend to visit him from England and the two of them took on the boys and some masters. Ford and his partner batted vigorously all the afternoon and utterly wore down the bowlers, but one of the masters, Littlejohn, persisted in using every wile in a vain endeavour to dislodge the batsmen, and Rutherford vowed that he was the real hero of this Roman holiday.

Dr W. S. Littlejohn, M.A., Aberdeen, was a famous teacher and disciplinarian, and an enthusiast in running the Cadet Corps, in which Rutherford obtained his certificate for proficiency as a sergeant. In due course Littlejohn became principal of Nelson College and later of Scotch College, Melbourne. He was really a classical master, but he

also became a thorough and proficient teacher of mathematics and science, and much of Rutherford's later success depended upon this training. Only a Scot can do all that Littlejohn did.

Rutherford was in Forms V and VI and became head of the school. He had a liberal education which was not unduly specialised. Although mathematics was his strong subject, he had no difficulty in obtaining scholarships and prizes for Latin, French, English literature, history, physics and chemistry. The modern cry of 'too many subjects' does not seem to have perturbed him.

In June 1888, he was top in all subjects in the Sixth Form and in his report his work in classics is described as being "as good as ever", his English work as showing "capital style and great power of reproduction". In mathematics he was "easily first, very quick and a very promising mathematician".

A schoolfellow, Mr C. H. Broad, sent some interesting notes to *The Times* (22 Oct. 1937):

Rutherford and I were in the fifth and sixth forms together during the whole of his stay. He entered into the full life of the school in every way, games as well as study, and although he could never be described as an athlete, he was a forward in the first Fifteen in his last year. What always particularly struck me about him were his extraordinary powers of concentration, even in the midst of the greatest turmoil. Some of us used to take full advantage of his abstraction in various boyish ways, banging him on the head with a book, etc., and then bolting for our lives. Another thing I well remember was his habit of strolling about with Mr W. S. Littlejohn on the half-holiday, up and down little frequented streets near the College, Littlejohn drawing diagrams in the dust of Hampden Street and discussing them with Rutherford. In those days chemistry was optional with French, consequently Rutherford began his science late in his career at Nelson, and then he was practically taken alone in physics and chemistry by Dr Littlejohn.

At Nelson, in addition to prizes for mathematics, his strongest subject, Rutherford gained the Stafford scholarship for history, the senior English literature scholarship, the French scholarship, the Latin prize, Form VI, and the Simmons prize for English literature, Form VI.

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Rutherford's parents

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1888]

THE FLAX FARM

5

The strenuous, heroic life of the early colonists is well pictured by Dr Marsden:

In the meantime, the family had suffered two serious hardships. In the first place, his two younger brothers were drowned in an accident in the Sound. The father and brothers scoured the shores for three months in a vain effort to find the bodies. This accident so seriously affected his mother that she, for a long time, lost her sunny, cheery nature, and never again did she turn to her favourite music or play again her cherished Broadwood piano. A little later, James Rutherford had a serious accident on the small jetty from which he loaded his sleepers, unfortunately fracturing five of his ribs. Shortly after his recovery, the Atkinson Government cancelled orders for railway sleepers, and the family perforce looked round for fresh avenues of occupation. His father crossed to the North Island and proceeded North from Wellington on horseback, looking for suitable areas for flax. Eventually he arrived at Pungarehu, Taranaki, near the coast, 30 miles south of New Plymouth. Flax-milling had not started in this area, so he was able to obtain suitable land at £3 per acre, near other flax swamps which he was afterwards able to cut under royalty. Returning to Havelock he chartered the *Murray*, under Captain Vickerman, and loaded it with his whole family, three extra operatives, and all his household furniture, his horses, his flax-milling machinery and a quantity of timber. The charter cost him £100. It took three days to get to New Plymouth, where the whole outfit was unloaded and the effects transported by the rough track to Pungarehu. Leaving his wife and younger children at New Plymouth, he proceeded to carve out a home and establish his mill. Soon he was relatively prosperous, although his flax was sold in Melbourne at only £13 per ton and had to be transported to New Plymouth for shipment over a road which took nearly two days to travel, with a five-horse team drawing only three tons.

It is interesting to realise the energy and ability which James Rutherford put into his flax-milling operations. He harnessed water-power to drive his mill. He experimented and developed a method of soaking the fibre after stripping and subsequently a special scraper to remove the vegetable matter so as to minimise the labour and time of paddocking. He looked ahead and planted specially selected native varieties. Nevertheless, he relied mostly on ready grown swamp-flax, and such was the

success of his operations that the flax he produced was reckoned amongst the best in the Dominion, and he was later able to retire to New Plymouth, all his children having married and settled in different parts of the country.

There is a good photograph of the Rutherford house at Pungarehu, with a long line of white flax in the background and the top of the mill in the left rear with the houses for the mill-hands on the right.

Rutherford seems to have been in every way a normal boy and as a youngster to have taken his share in the chores around a farm, chopping wood, running errands, gardening and helping to milk the cows.

There was a tale which Rutherford used to tell with gusto, varying it a trifle to suit his audience. He told it to a group of young children who called him 'Grandpa' and later on promoted him to 'Lord Grandpa'.

"My mother sent me out to bring the cow home to the paddock and to collect some fire wood as well. So I drove the cow and pulled a big branch of a tree behind me. Then I thought, why shouldn't the cow help me? So I tied the branch with a rope to the end of her tail and she went quietly home till she came to a narrow gate. Here the branch jammed and the last bit of her tail broke off!"

"Whatever did you do?"

"I put a plaster on her tail and when I heard her in the byre later on mooing comfortably, I knew that she was all right."

"What did you do with the bit of tail?"

"I heard that cows grew from cuttings so I buried the tail in the ground."

Long after, the youngest child used to explain how cows came from cuttings.

There was another story of how Rutherford as a boy learnt to throw the *bolas*. He would hold one ball in his hand, whirl the other ball on the end of a string round his head and then let them go. He gradually learnt to throw them higher and farther, until one day they went right over the top of the house. From the other side came loud screams and he rushed round to find his young brother had been hit and was going