

BREAD FROM WATER

New Zealander's Work in Canada's Wheatlands

BECAUSE New Zealand has three or four inches of rain where Canada's prairie land has one, not so much of its soil disappears in the wind, but more of its fertility goes out to sea. In Canada the maintenance of fertility is not yet a problem. The prairie farmer's task there, according to L. B. Thomson, O.B.E., B.Sc., a New Zealander who has been directing the soil conservation campaign in Western Canada, is not so much to

like that the plough has not proved the best implement."

"You just disc and harrow?"

"We one way disc and don't harrow. The cloddier the surface is, the better it resists the wind. But we do more than leave it unharrowed. We cultivate in long narrow strips running north and south across the wind. For every strip we sow we leave another strip lying fallow, and even on the cultivated strip we are careful not to bury the standing stubble. We have discovered that six or eight inches of stubble will knock three or four miles an hour off the wind velocity, and greatly reduce the loss of soil."

"How can you cultivate without burying the stubble?"

"By using one-way discs. The soil is turned over, but the stubble, which has been headed and not cut, remains standing above the ground and breaks up the wind currents."

"So that is what strip-farming means?"

"Yes, that, along with trash-covers anchored in the soil, is what has saved us."

When *The Listener* met Mr. Thomson, he had just finished a tour of the South Island and was about to start on the North. He had seen a good deal of the farmlands lying between the green flats of the Oreti and the hills of his native Marlborough and, of course, he had seen much of Otago. So one of the questions we put to him ran something like this:

"You know that Otago is entering its centennial year. You know from your own past experience, and from your reading, something of its history, and you have now seen it more or less after a century of settlement. What have you to say, speaking as a soil conservation expert, of the state of Otago land at the beginning of the second hundred years?"

"Well," he began, "soil conservation is common sense, and there's plenty of common sense in the South. On the good Otago land, I would say that over the past 50 years they have done an amazing job—particularly on the better cropping lands, and they have developed a type of farm economy that takes account of all the principles of soil conservation. At least, I didn't see any place on the good land where these principles were being disregarded."

"What about erosion?"

"I expected to see more water erosion than I did. Wind erosion is our problem, of course, in the western prairie states. There we regard conservation as taking four forms. First there is conservation of the soil; second, conservation of moisture; third, conservation of feed—you haven't the problems of feeding that we have in winter and in times of drought; then, fourth, there is the conservation of finance which is necessary to implement the others. The Otago

people seem to have been pretty good conservers of finance too.

"And when I speak of Otago, I mean Southland as well, of course. The work they have done there in the selection and breeding of sheep has been excellent. I've never seen better Romneys anywhere, but then I haven't seen the North Island sheep yet."

Fire in the Tussock

In the dry-land country of Otago he found conditions closer in type to those of the Canadian prairie land, but not the same commonsense as he had found in other parts of the province.

"In that kind of dry land—the 14-inch annual rainfall country—it's a fallacy to try and apply humid-country practices. It is a separate problem and requires separate study. Moisture is the first consideration, that and the moisture-holding capacity of the soil; and the problem is how much of your rainfall you can store up. Wheat, for example, when the plant is at the head stage, uses five times the moisture it requires at other stages of its growth. All farming practices, therefore, must aim to conserve moisture. You must base your policy on the precipitation-evaporation ratio. Every time you harrow or cultivate you lose moisture by evaporation."

"What about burning?"

"Burning is a very unwise policy on that type of country; you're destroying something which has taken many years to evolve. I'm told you have large areas completely denuded of vegetation—I've walked over some of it, and we have plenty of land in the same state in Canada. But our policy now is to conserve what was naturally there first. We haven't

had much success with artificial re-seeding. In the dry country of the South Island you have tussock grasses of many species, and in all that tussock-land the old grasses protect the seeds and seedlings from both the hot dry weather and the winds. To conserve that kind of grass, controlled practices in grazing are essential. As for burning, no rancher in western Canada would think of it—there's a law against burning land, but it's the kind of law you don't need to enforce. If a farmer suffers burning, say by the railways, he applies to the Government for a reduction in rent—most of our grazing lands are Crown lands—and we know that it takes three years for burned land to come back. But I've seen lots of burning in the South Island."

"The New Zealand farmer usually gives these excuses for burning. He burns to destroy old, unpalatable grasses, or he burns because he's afraid his neighbour is going to burn, and so gets in first with firebreaks. But most of them burn only when the ground is wet."

Crop Cycles

"Well, we don't even burn on our crop-lands; we leave the stubble sticking up in what we call a trash-cover, to counteract wind-erosion. And we're putting the straw back into the land at the rate of a ton to the acre. In the past 15 years that has made an enormous difference to the land. We don't tear into the land any more. But in Otago I thought there was too much of a tendency to apply damp land methods to dry land areas."

"Leaving Otago and going back to your Canadian prairies, what does your wheat-farmer do when he's not growing wheat?"

"He's fallowing his land—he takes one crop from it in two years, or two crops in three. There again it's a question of moisture conservation. Our whole philosophy of dry-land farming has gone through a complete change. For instance, the capillarity of the soil



L. B. THOMSON

"We've got our problems in the wheatlands, but fertility is not one of them"

keep fertility in the soil but to keep the soil in the paddock. The surface soil in Canada's wheatlands, he told us, is often five or six feet deep, and does not lose its fertility. It does, however, lose its moisture, and the most important part of Mr. Thomson's work consists in protection of the soil against the prevailing south-westerly winds.

Representing the Canadian Department of Agriculture, Mr. Thomson is back in New Zealand after an absence of 27 years. He was born in Blenheim, and worked on a Marlborough run, before going to Canada as a young man.

Some of the first settlers in western Canada, he explained, came from the moist countries of Europe.

"So they carried on the farming methods of Europe, and just about ruined themselves. Fortunately the awakening came before it was too late. We realised that instead of making the climate fit our farming we had to adapt our farming to the climate, and that meant, to begin with, newer methods of tillage."

"Even in the production of wheat?"

"It's the production of wheat I'm talking about—cultivating land where the rainfall is 10 to 15 inches. On land



SOUTH ISLAND tussock-country—"In that kind of dry land it's a fallacy to try and apply humid-country practices"