

I will not further trespass upon your time. Other articles of Maori handicraft formed with the tools I have attempted to describe must be passed over with slight notice: *Heru*, combs of various kinds of wood and of bone; the *putara*, or conch-shell, used as a trumpet; the *pukaea*. Musical instruments: the *koauau*, *kowauwau*, or flute, with which Tutanekai serenaded and charmed the maiden Hinemoa; the *pakuru*, the *putorino*, and many others. The limits of a single paper will not allow of more than a rapid glance at some of the more interesting items in the Maori repertory of tools and weapons.

I beg now to thank you for having so patiently listened to me, and to say that, if my imperfect attempt to deal with an interesting subject should lead to further inquiry on the part of some of my audience, I shall feel that the time occupied by me in putting together these few notes, and by you in listening to me, has not been altogether wasted.

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ART. L.—*Why should School-teaching provide only for the Counter or the Desk?*

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[Read before the Auckland Institute, 28th August, 1893.]

It is not usual to associate, in idea, the work of the missionary with the advancement of science—the one seems to depend so much on the warm feelings of the heart, the other on the cold reasoning of the mind. So bright a halo of self-sacrifice appears around the labours of the missionary that we can imagine conversions as the result of sublime enthusiasm alone. But as a matter of fact the missionary and the scientist work hand-in-hand—an alliance that can be seen by studying the manner in which any particular mission has been established. Indeed, we shall find that practical scientific knowledge is a more powerful aid to success than pious enthusiasm or even than fiery zeal.

A good example of this is afforded by the mode of establishing the mission sent in 1814, to convert the Maoris. First of all the mission party gained a firm footing in the island by securing beforehand the friendship of a Maori chief who admitted the missionary and his party to membership of his tribe. This same chief had not only been to Sydney, but also to London, where he formed some idea of the wealth, the genius, and the might of the English. Ignorant, as he was, of the language, he could not have understood anything of the

burning questions of the day on war, on religion, or on political reform; but he might well have looked with astonishment at the result of their knowledge of the forces of nature in producing food, making clothes, building houses, and fashioning weapons. Some of these wonders effected by science he no doubt tried to impart to the men of his tribe, but with little success until the arrival, some years later, of the mission party. His new friends arrived in a large ship provided with stores of all kinds. They landed with the importance of men who possessed superior wealth, superior knowledge, and superior goodness. The houses placed at their disposal were soon stored with all manner of goods, sufficient to enrich not only the whole tribe, but, to the imagination of the savage, all the tribes of New Zealand. It was soon found also that the stores belonged to men who knew well how to make use of them. The blacksmith, the builder, the ship-carpenter, the flax-dresser, and the farmer were soon busy, each at his own occupation, preaching sermons, so to say, by the wonderful works of their hands, while the missionary was busy mastering the rudiments of the language. With what admiration the natives must have watched a party of these new members of the tribe carrying on their operations in a kauri forest. The trees fall with startling rapidity under the blows of the keen axe; the logs are moved about by levers, slid along a plane, rafted to the saw-pit, and there the crane, with its mighty iron hand, lifts them into position. After the logs are sawn into planks comfortable houses are built; while, at the same time, a large ship rises up before their eyes, that is finally launched into deep water apparently with the blow of a hammer.

All these great works were accomplished in less time than the natives would have been able, without the white man's aid, to fell a tree and trim it that it might be made into a canoe. And still new wonders were every day displayed. The blacksmith's forge was soon aglow with the molten iron, and curious articles were fashioned before their eyes. The flax-mill sent forth its hum and the fibre came forth in quantity, very different from the tedious and laborious scraping with a pipi-shell. Strange animals—horses and cows and sheep—were landed and enclosed near the missionary's house. The ploughing and harrowing and sowing went merrily on. New vegetables were grown, and fruit-trees of all kinds were planted. Abundant crops of corn were soon gathered in, which the miller changed into flour and the baker into bread. The Maori who saw all these wonders performed must have been very dull indeed not to recognise that the mythical works ascribed even to their deities were as nothing in comparison with what could be done by this wonderful missionary and his

party. And all this reputation was built up on their practical, scientific knowledge. Their knowledge of the mechanical powers gave them the strength of a giant, with the rapidity of a divinity. Their knowledge of the properties of water enabled them to grind their corn, to conduct the water where they pleased, and even to make it rise from the earth at their own doors. The blacksmith was the metallurgist, and the missionary was the chemist and the doctor.

If some intelligent Maori had asked them, "How is it you are able to perform all these wonderful things?" some of them would no doubt reply, "We have learned how to do many of these things in England, and from books we can learn how to do anything else that we may wish." This, then, was the clue to knowledge and power; and need any one be surprised that the chiefs were anxious for schools to be established that they and their children might learn how to do all those wonderful works? Poor simple-minded savages! They were soon to find out that schools were not established to teach anything more useful than what was required to become a clerk or a shopman. They were not to encourage self-reliance and self-help, but to inculcate the necessity of the individual being always guided by authority.

Even this instruction, poor as it was, only applied to the middle-class schools at that time in England, for in the primary schools reading, writing, and arithmetic were of little importance compared with the catechism and the geography of Palestine. As for the college education, the highest honours were conferred on those who showed most knowledge of the languages of two nations that were barbarians in comparison with the English. The Maori might be surprised to hear that in this much-bepraised classical learning there was very little of it true, and none at all useful; and that a more helpless person, so far as education is concerned, can scarcely be imagined for the colony than a man who had graduated with the highest honours at a university. The Maori, however, got his heart's desire. Schools were established and examinations held, but what effect they had on Hongi and his braves is not very clear; but the benefit of the lessons in practical science is praised by no less a person than the renowned Darwin. He writes, "Moreover, native workmanship, taught by missionaries, has effected this change: the lesson of the missionary is the enchanter's wand. The house had been built, the windows framed, the fields ploughed, and even the trees grafted by the New-Zealander. At the mill a New-Zealander was seen powdered white with flour, like his miller brother in England. When I looked at this whole scene I thought it admirable. It was not merely that England was brought vividly before my mind, yet, as the evening drew to a close, the

domestic sounds, the fields of corn, the distant undulating country with its trees, might well have been mistaken for our fatherland; nor was it the triumphant feeling at seeing what Englishmen could effect, but rather the high hopes thus inspired for the future progress of this fine Island."

And these high hopes are certain to be realised—all that Darwin found sombre and gloomy have during the past sixty years nearly vanished. The dense forests have been removed, and corn-fields, pasture-lands, and orchards have taken their place. Large districts, like the Canterbury Plains, that afforded no food for the natives, have now become the granaries not only of New Zealand but of England. The bare shingle-slopes that the natives seldom approached now feed thousands and thousands of sheep. Metals and minerals hidden deep in the earth are being worked out and employed in the service of man. Every harbour and river-mouth has its rising town, well drained, well built, with public parks and public buildings, while the country in the neighbourhood of the town is but a succession of lovely gardens. It is the knowledge of science, that increases more and more, which acts like an enchanter's wand, and has changed this country, gloomy and unattractive even to the eye of Darwin, into the lovely country that visitors and residents alike agree in calling it. It is to our knowledge of the laws of nature that we look for aid in all troubles, bodily or mental, or municipal or national. We had depression, and depression disappeared, not through prayers in the churches, nor through the eloquence of our representatives, nor through the vigorous policy of the Government, but from the fact that scientific men have shown us how to produce great cold in a chamber, and in this way beef and mutton can be carried fresh and good to the European markets.

Now, it was pointed out above that sixty years ago the school-teaching was not in harmony with the duties of life. Young people while at school, with the exception of learning to read and write and cipher, were trained to have their judgment controlled entirely by that of others; whereas the producers, from the farm-hand to the F.R.S., must depend on his own judgment and on his knowledge of the laws of nature.

What steps, then, we may well ask, have we taken so that the teaching in our schools shall be a fit preparation for the requirements of later life?

In answer to this question, it may be as well to show what we do with the very pick of our boys and girls. In the month of December a bell is rung, to speak metaphorically, that calls to all to "come up and be examined." This is eagerly responded to by boys and girls of all ages and from all kinds of schools, from the dame school to the university college.

At present, however, we have only to do with those who are competing for the District Junior Scholarships. I need hardly say that very much more importance is attached to their literary than to their scientific attainments.

We may suppose the examination over, and that some practical man, not acquainted with our school-teaching, on being requested to address the successful candidates, speaks as follows: "Boys and girls, you have been awarded the highest distinction for scholarship in the district schools; and there are, as you know, not only honour but also certain emoluments attached to this distinction. The object of this is to give you the power of developing your natural talents so that you may prove a benefit to this young country. You know that all that has been done in developing the wealth and resources of New Zealand is the work of scientific men; try, therefore, by diligent attention to your teachers, and by devotion to your studies, to become worthy successors to these great men who have done so much, and are doing so much, for New Zealand."

Now, after this exhortation, let us see what we do with these young people—the hope of the country. They are at once put to work on their new course of studies, and Latin is made of primary importance. Let us be under the mark, and say seven hours with a teacher and eight hours per week private study: that is, fifteen hours out of the whole number—say, forty hours per week. The twenty-five hours that remain are for the study of English, French, history, mathematics, and science.

This great devotion to Latin is not the whim of the school-master. The course is laid down by the higher powers for those who wish to give proof of their diligence and ability by the offer of senior scholarships, at which examination four times as many marks are assigned for Latin as for chemistry. The real question, then, for an ambitious and talented candidate is, How can Latin be best learned? The only answer is, Devote plenty of time to it.

After the student succeeds in gaining this scholarship another goal is placed before him—the University Junior Scholarship—where the great subject is Latin. Thus we see that at the lowest computation the study of this much-revered language absorbs at least one-third of secondary school and of college life—say, three years out of nine. Try and imagine what reams and reams of paper are used yearly by each student in writing this language, whilst, if we take into account all the students since an impulse was given to Latin studies, some twenty years ago, the paper used would make a vast pile. If all this Latin-covered paper was made into bricks there would be sufficient to build a tower of Babel that, if

erected in a prominent place, with a suitable inscription, ought to convey an important lesson. Such a structure would show the earnest untiring efforts made by the most talented youth in this colony in order to learn a language that can afford little or no information. Indeed, it is difficult to say what is the actual gain from this study. There is far less information to be gleaned about Italy and its people from the whole range of Latin classics than can be obtained with respect to New Zealand from a shilling almanac. The Romans were ignorant of art and science, and gloried in their ignorance.

Excudent alii spirantia mollius æra,  
 Credo equidem; vivos ducent de marmore vultus;  
 Orabunt causas melius; cœlique meatus  
 Describent radio, et surgentia sidera dicent;  
 Tu regere imperio populos, Romane, memento,  
 Hæ tibi erunt artes.

Stripped of the rich apparel of figurative language, the orders were: "Noble Roman, do not trouble your head about science and art and literature; your business is to take possession of the property of others, and to make the vanquished work for you." Nor is Virgil the only one who mentions the humble acquirements of the Romans. Lucretius and Cicero are equally plainspoken; so that it is wonderful to see the great prominence given to this subject in the school course, and the astonishing ardour with which the language is studied by the most talented of both sexes.

It is now time to turn to what must be considered the most important part of our education system—I mean, of course, the instruction given in the district schools. In them we require instruction that will prepare the intelligence of the youth to develop the resources of this country, as it is from these schools that come the farmers, miners, workers in metal, in wood, in wool, and in fibres—all alike get their living, and contribute to the welfare of all, by knowing the laws of nature in relation to their several occupations, and acting in accordance with them.

It is, then, rather surprising to find that little, very little, of the study of nature or her laws enters into this school course. There is a little science prescribed for the Fourth, Fifth, and Sixth Standards, but it is so badly taught that this is what is said by the Inspectors of Schools for Auckland Province: "In our last report we mentioned that we found, when questioning a class in elementary science, that the answers were too often given by a very small portion of the class under examination. We notice but little improvement in this respect. We have again to urge the absolute necessity of teaching this subject experimentally. . . . We recommend those teachers who can conveniently do so to attend the

Saturday science lessons at University College, Auckland, that they may acquire skill in experimental work." This, I may remark, is not a report of the state of science-teaching in 1832, but in 1892.

The advice given to the teachers is good, but no great hopes can be entertained for those who commence late in life to study science. Like all important studies, early training and a real love of the subject are the essentials to success. Science is not a subject that can be taught without years of practical work. It has a language of its own, copious and definite, the full meaning of which is acquired by experiments. Indeed, to attempt to teach the most elementary scientific book without full practical knowledge must result only in failure.

The Inspectors also refer to the teaching of drawing in no flattering terms; and this is another essential in technical education. It may now be well asked, At what are the children engaged for the eight years they are at school?

For four years they learn reading, spelling, arithmetic, grammar and composition, geography, and drawing, until they reach the Fourth Standard. Then for another four years they learn the same, with the addition of history and science, which has been already dealt with.

The school instruction only fits them for clerks or shop-helpers, and yet, in our unreasoning way, the cry is raised that the boys and girls, on leaving school, want to go to the desk, or the counter, or to become teachers.

The Colony of Victoria has now gone in for retrenchment, and, as a part of it, dismisses school-teachers. Now, if the schools were preparing the producers for real life, nothing could be more foolish; but it is found that the real product is shoals of clerks and store-helpers, which it is thought can be produced more cheaply. A farmer on a large scale who has got into difficulties dismisses stewards, overlookers, clerks, but takes good care to keep his good workmen. He saves in out-building, household luxuries, and race-meetings, but he cannot do without his good workmen, or utter ruin would ensue; and teachers would be equally essential to the colony if their instruction increased the number of intelligent producers. We are not left in any doubt how primary education will be carried on in Victoria, for our method that was adopted a few years ago is quite bad enough to imitate.

It would be strange if some ardent admirer of educational retrenchment had not, ere this, thus expounded the manner in which education is so cheaply carried on in this province: "In a school with an attendance, say, of four hundred, there are seven teachers whose wages range from 7s. 6d. to £1 a week; then two at £1 10s. and £2 respectively; while the

head-teacher's salary fluctuates with wet days, measles, whooping-cough, and other visitations, for which he is properly held responsible."

Of course the number of teachers varies with the attendance, but more than half the number are at a salary of from £20 to £30 per annum. It is certainly very economical to have a standard of forty or fifty pupils taught for 7s. 6d. a week; but where do the discipline and education come in?

There is a certain silence and order preserved, or dismissal results; but what becomes of the mental discipline, which is the great gift a teacher can impart?—that power, I mean, of devoting the entire attention to the subject of study, from which arise order and silence. One thing, however, is certain; that the result of having this work cheaply done is that the pupils who pass the Sixth Standard are now, so far as my experience goes, very inferior in attainments to what they were three years ago. I mean, of course, in those subjects that would fit them to be office-boys and shop-apprentices, for the system seems to have no other object in view. The breach is yearly becoming wider between the school and the realities of life. Our education, whether in higher or lower schools, is subjective to an extreme degree—just of the kind to produce the discontents and riot that characterized the latter days of the Roman Republic, when the belief in words was equally strong. This devotion to the study of mere words appears, like the serpents in the Laocoon group, to poison individuality and to crush objectivity out of existence.

I mentioned what the Auckland Inspectors said of the teaching of science; but all the Inspectors throughout New Zealand have the same report. The Inspectors for Wanganui are especially outspoken. They say, "To call the matter taught in the schools science is a misuse and degradation of the term."

We must therefore honestly confess that, so far as public education is concerned, the instruction in science has scarcely begun, and that no regular plan has been so far adopted with the desirable object of having the instruction in school in harmony with the requirements of actual life.

There is, however, in my opinion, a simple remedy in our hands not requiring any great change in the present system, and little, if any, additional expense. In fact, there need be no change in the present instruction until the children have passed the Fourth Standard. After this the pupils, instead of continuing to attend the same school, would go to a central school, where the education would be for the most part scientific.

Say that there are five schools, with a total attendance of two thousand. These would supply an average attendance of



one hundred and eighty for the central school. This school-building would be provided with six suitable rooms, for natural science, mathematics, drawing and sewing, English, science, and a laboratory.

Then a competent teacher would be required for each department. This might prove a slight difficulty at first, but every year would help to remove it. There are many suitable assistants available who are now teaching children to spell, while the teacher of science at present would be more suitably occupied in their places. I do not think any one would doubt that a three years' course in such a school would put new life and new vigour into this young country. I hope I have said enough as to the utter futility of employing any but competent teachers.

To enumerate all the benefits arising from such a change would compel me to double the length of this paper, which is already too long; but, at the risk of being tedious, I will enumerate a few.

It will enable science to be at last properly taught, which cannot be done without a teacher that knows it, and the scientific apparatus that illustrates it.

It will realise the long-desired benefit of having drawing taught in a manner suited to the wants of mechanics.

It will supply the right kind of students to the various technical schools that are now being founded in the colonies. But I need hardly point out that such schools will prove failures unless a better preparatory training be given to the pupils.

It will enable parents to provide a higher education for their children, when they do not desire Latin and French as an essential part of it. A central school such as I advocate would soon furnish the teachers of the sciences and of mathematics at the University College with the best stamp of students—students that would be trained to develop the resources of this colony, while now they fritter away their best years on subjects that are but the shell and husks of an education.

At the commencement of this paper I mentioned that the philosopher Darwin was delighted with the skill that the Maoris at the mission-station displayed as agriculturists and as artisans. And now, in conclusion, let me ask, Is it not in our power, before this manual labour is commenced by our own people, to impart to them not only the principles of the operations, but also the power of reading with ease the scientific books that relate to each one's own occupation?

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