

The building on the corner of Queen and Mutual Streets, Toronto, was erected in 1858, and occupies a nice situation. It has two handsome spires. A new lecture hall has been built, and the church was reopened about two years ago by the Rev. J. S. Mackintosh, D.D., of Philadelphia. Dr. Macintosh was the immediate successor of Dr. Cooke, in May Street Church, Belfast, and is among the most eloquent preachers in the Quaker City. K.

January, 1889.

MANCHURIAN SILKWORMS.

BY THE REV JOHN MACINTYRE, MANCHURIA.

(Concluded from last issue.)

In five or six days comes the first mute. In this second stage the colour becomes a bright yellow. It looks sometimes like a yellow worm with black rings, but in reality the rings are spots. Even at this stage the worms do not make much havoc, and they still feed on the under side of the leaf, rarely attracting the attention of the passer-by. But they now eat from the leaf edge inwards, and as they require more space they begin to spread over the adjacent leaves on the same spray. By the 9th of July a remarkable transition had taken place. The worms had passed the third mute, and were of a creamy white colour, regularly marked with black spots. The spines became a very remarkable feature at this stage. It is as if the worm bristled with minute hair pencils of snow-white colour, with sometimes just a suspicion of blue showing through the white. The claws show bright yellow, and there is a yellow plate or sheath on the second segment as also on the tail segment. The worms now scatter to feed, and appear freely on the upper part of the leaf. By July 14th some of the worms were through with the fourth and last mute. The suspicion of green which showed through the white towards the close of the last stage now deepens. The belly and sides are a lovely green, but the back is still white. The colours are now black, white, blue, green, and yellow. Thus the belly is a rich green, shading into lighter green towards the sides. The body has the appearance as of green shining through a white ground. The same yellow sheaths remain, the claws show a brighter yellow, so does the head, and there are yellow patches on the legs. The spikes are a pronounced blue, and there are large blue patches on the legs, while the hairy foot—the prehensile part—is distinctly blue. The bright black spots also remain and show alike on green and white. By the 20th of July I noticed that the spines had begun to shed the white down which gave them the appearance of hair pencils in the third stage, and became sharp-pointed, the blue tint deepening. The worm I should say at this stage attains to a length of two and a half inches. Though such a conspicuous object it makes no attempt to hide itself. In my first experiments I kept a lad sitting all day under the tree to save them from the magpies; but I have left them to their own fate this year, and have fared equally well. Not one has gone amissing, nor do the magpies hang on about them as they did last year. Is there something malodorous about the worm, as there is in the name of the tree? Certain it is that in a large well wooded acre plot visited by all manner of birds, migratory and native, this year's worms in their most conspicuous stages have fed in peace. Nor have I ever known them molested by spiders, ants, beetles, and the general run of enemies which decimate the oak-feeding worms. In this fourth and last stage the worms change their style of feeding. They are now possessed with a spirit of eating, and a single worm will mow down a single leaf in no time. They make it a point now to wander out to the end of the twig or frond, and eat back towards the tree, taking everything with them, even to the leaf pedicle. They insist also in beginning with the tip of the leaf, eating first down the one side of the midriff and then the other. To get at the tip they lay hold with the front set of claws and draw the leaf into them. They then hold on by the tail prehensiles, and eat comfortably standing out in mid-air. It is interesting to watch them eat. The movement reminds one of a man mowing with a scythe: the worm by a movement of the head and the first two joints seems to mow little semi-circular patches by a rapid nip-nipping motion which one can hear, and which is so swift it seems almost like one stroke or movement. Eating is now such a business with them that they are not easily disturbed. You can count the spikes and spots without taking them from their work, and they are not the least scared if you move the branch about, nor even if you turn it over. I have not succeeded in reckoning the actual quantity of leaves consumed during the respective stages, but after feeding eleven worms on a fourteen year old tree, I miss only fourteen fronds or twigs, each such twig numbering usually thirty leaves or thereabouts, each leaf at its best being about five inches in length by two and a half inches where it is broadest. Outside of these twigs not a leaf is touched. It is further worthy of note that my last year's collection fed exactly on the same branch of the tree. On the same tree I might easily have nourished from seventy to eighty worms without injury. But there is an instance here of a three-year-old tree dying under such an infestation. This year I have again made a careful enumeration of the distinguishing marks of the worm after its fourth mute, and some two or three days before spinning. Take the worm as consisting of thirteen segments, twelve of these (all except the head) have spines. These are distributed thus: the second and third claw segments, eight each; the remaining ten segments, six each; giving thus seventy-six spines in all. I have counted as many as one hundred and twenty-eight black spots. These may be thus enumerated: each of three claw segments, ten; each of four leg segments, twelve; each of four free segments (i.e. with neither claws nor legs), twelve; tail segment, two; in all one hundred and twenty-eight. The spines are

arranged in six regular rows along the length of the worm. Beginning with the ridge of the back, they do not extend downwards as far as the claws or legs. There is room for a black spot over each claw, and for two black spots at a slight angle off the perpendicular over each leg. Whereas two segments have eight spines and the rest only six, it would seem as if the missing spines were elastically represented by black spots. The spots are arranged in pairs, or, where single, the opposite sides correspond. The claws and legs are conspicuous beauty points. Thus each bright yellow claw is surmounted by a black spot; while the leg is ornamented by two bright black spots, a ring of blue, a ring of yellow, under which again with every movement of the worm shows out the blue hairy foot-pad, or prehensile. Altogether, for amateurs there could not well be an easier nor a pleasanter beginning of silk worm studies.

Hai Cheng, 27th August, 1888.

BOARDING SCHOOLS IN THE NORTH-WEST.

The many discouragements experienced by our missionaries in the North-West, arising from want of congenial social intercourse, which their position among the uncivilized heathen renders impossible, and the lack of sympathy and appreciation on the part of the Indians with the work of evangelization and education going on in their midst, together with the rival and adverse influence, in some cases, of Roman Catholic agencies might cause the pessimist to tremble for the success of our missions there. But there is a bright side to the picture, and the reports sent to the General Assembly for the past year are encouraging and hopeful, and show an earnest steadfastness and heroic patience in coping with difficulties, and a brave determination to make the best of circumstances.

By consolidating their position and concentrating the forces at their command, our missionaries hope to secure a permanent hold upon the hearts and minds of the Indians among whom they are labouring. This desirable end they believe is to be attained, most surely and effectively, by removing the children from the wigwam and all its debasing influences, and placing them in a Christian atmosphere, where the refining influences of a cheerful, practical, domestic and religious home cannot fail to stimulate in them a thirst for knowledge, and a desire to imitate the virtues which they take note of and admire in those who are over them in the Lord. The personal influence thus acquired, and the breaking off from old associations would in a short time effect a more radical change in the condition of our missions in the North-West than the present system of day schools is accomplishing. And it is the realization of this fact that has prompted some of our missionaries to solicit the aid of the Church and the Government in encouraging the establishment of these institutions.

Of course the cost of maintaining them would necessarily involve a greater expenditure; but in view of the results to be obtained by Christianizing, and rendering worthy members of society the rising generation of Indians, it is to be hoped that a noble effort will be made to help still more generously the men who are devoting their lives to ameliorate the condition of their less favoured brethren, who have an equal interest in and right to the joys and privileges of the Gospel. Last winter, a boarding school, bordering on Muscowpetung Reserve, was opened with an attendance of fourteen pupils; the cost per pupil is about \$60 per year. The Government gives one-half of this sum. It is intended to erect a boarding school on Stony plain reserve next summer. Mr. Magnus Anderson is our missionary there, and his wife teaches the girls knitting, and sewing, etc. The establishment of a boarding school on the File Hills Reserve is looked forward to, and earnestly longed for by those in charge. The difficulties in that section are great, and if the children could be wholly withdrawn from the adverse circumstances which hinder their higher development, better results might be expected.

Encouraging reports come from the Rev. Hugh McKay. The summer before last he erected and furnished a large building for a boarding school, at a cost of \$3,765, contributed chiefly through the generosity of the Woman's Foreign Missionary Society. The work goes on most satisfactorily.

We hope that friends will not slacken, but rather redouble their efforts in helping this noble enterprise, and that a deep personal interest will be taken in these boarding schools. Would not a more wide-spread interest in this Scheme be awakened if, apart from the societies now engaged in working for it, three or four families clubbing together—young members and old alike, who have hitherto been engaged in no work of the kind—should agree to undertake the support of a child in one of these schools? I presume that by corresponding with any of the missionaries who have charge of boarding schools, the name, age, and appearance, etc., of any child to be selected would be given. And apart from the good done to the cause, a blessing would surely be received by those, who in caring for a little Indian protégé, had been found to give a cup of cold water to one of His little ones.

How many families will act on the suggestion?

S. F. HOWIE.

Brussels, January, 1889.

TEACHING AND TRAINING.

BY DELTA.

While "God made man upright" and pronounced him "very good" yet sin has so disordered and depraved every element of his nature, that a higher authority than human has said "There is none righteous, there is none that doeth good, no, not one." Such being the case, God has shown His wisdom in discovering a remedy fitted as intended to reach and to rectify the whole man, His goodness in bestowing it and His

power in applying it through the instrumentality of that Gospel which is "the power of God unto salvation." As it is the design of God, so should it ever be the desire of man, that that Gospel should be so preached as to reach, to rectify, and to regulate the head, the heart, and the will of man, so as to enable him clearly to discern, rightly to desire, and resolutely to determine. In short, the whole Gospel should be preached to the whole man; all is presented to him, all is fitted for him, and all needed by him. Some preachers however, overlook this, and in consequence, ever fail to capture and control the whole man. Some deal chiefly with man's intellectual being, so that while doctrine may be clearly seen, and intelligently accepted little or no desire is awakened. Others deal largely with the emotional in man; and thus while enthusiasm may be roused and actively exhibited, yet it is often "a zeal without knowledge," an attachment to the preacher and the denomination, rather than a love to Christ and a delight in his service. Others again, deal more with man's will-power, and while earnestly urging men on, both "to will and to do," seeing that the will, or the will not, determines man's destiny. Yet such are not taught clearly to discern as they should, and ardently to desire as they ought, hence an ignorant stubbornness, instead of an intelligent stability. As there are three persons in the Godhead, so there are three persons in our manhood, and each should be equally honoured, educated and employed, so that man's triune manhood may be developed, regulated, and exhibited alike in place, in purpose, and in power for the glory of God and the good of mankind. While in God's world there is ever a ceaseless diversity, there is no less a harmonious unity. So in God's Word there is ever a unity amid diversity adopted and designed to meet every case, and mature every requirement; for in both, there are lights to enable every man to discern objects, to awaken desire, and issues to influence the will, all embodied and exhibited either in utterance or existence, and crowning all, we have a perfect pattern of man's true personality, whether it be to discern, to desire, or to determine, all in unimpaired power and in perpetual action. Thus God's Word is ever designed and adapted to reach every element of man's nature, and every exigency of his life, be it of saint, or savage, or of sage.

The great aim of the preacher then, should ever be to deal with and develop every attribute of man's nature, so that by the instrumentality employed, and the Spirit's agency promised, he may regain that "image" and that "uprightness" by grace, which he has lost by sin, and that body, soul, and spirit may be so regenerated and regulated, as to enjoy the happiness which godliness, or God-likeness secures, for of nothing else but godliness can it be said that "it is profitable unto all things, having the promise of the life that now is, and that which is to come." It is at once the province and prerogative of the preacher, then, to teach, to disciple the nations to educate or lead out, to develop their better being. This is the true "evolution," the true setting forth and "survival of the fittest," designed by God, and should be desired by man. Man is like a seed, which, in order to its perfect productiveness, every element of its nature must act and be acted upon. So in order to "bring forth fruit unto holiness," the whole constitution of man must be savingly affected, must act and be acted on, and hence for this purpose "the whole counsel of God" should ever be faithfully and affectionately employed; for "all Scripture is profitable."

If preachers then are to be teachers of whatsoever Christ has commanded, it is a fundamental truism that they must first be taught, and while some may be ill able to teach what they do know, no one can teach what he does not know. It was wont to be argued, and sometimes is still, that the all-wise God is not dependent on man's wisdom; if so he is certainly far less dependent on his ignorance. God Himself sent a teacher, who "spake as never man spake," thereby showing the instrumentality which He employs, and as Christ as His servant, neither took His own way, nor did His own will, so the preacher should, by his wisdom, be able to know not only both what to will and to do, but to bring forth, not from his own fancies, but from the revealed wisdom and will of God, "things both new and old." Now as the purpose of the preacher's teaching should be to develop the whole man, so the teaching which he receives should be similar, alike in aim and in issue. While it is the province of the professor to prescribe what is to be done, and encouragingly to show both the how, and the why, of the doing, yet the student must do the work, for it is only by persistent personal effort that he can master the subject and make it his own, and it is only by such effort that his powers become at once developed, strengthened, harmonized and concentrated. In order to produce systematic thinking on the part of the student, his teacher must ever present a systematic thought, for not a little is learned by imitation, as well as by instruction. It can never be gainsayed that it is only by persistent, personal effort, that powers are strengthened, and purposes achieved, and that thereby the man rises above his fellow and yields an influence alike weighty and worthy, for "the mind's the measure of the man." We speak of genius, but what is genius? It is power possessed but latent, and it is "only when cultured and called into exercise that it can either ennoble its possessor or benefit his fellowmen. Hence, to be a genius is to be a worker, and our greatest geniuses have been our greatest workers. In short, genius in the ordinary acceptation of the term, is but exhibited effort; and without this great minds would be little else than gigantic babes.

Taking mind and memory then in their wonted sense, the latter is intended as the storehouse of the former, but if simply filled by the mind of another, it becomes a mere stagnant cistern rather than a living well-spring; and hence from lack of personal effort and proper mind culture, the resources of many of our young men so soon and signally fail, and a change of pastorate is necessary. One man may generously, for the while, supply the lack of a needy neighbour, but if that neighbour cannot, will not, or does not know how to work, he can never replenish his lacking stores and feed his people as he ought with the bread of life. It is the personal effort to acquire, that at once strengthens the mind and stores the memory and matures both, and what is thus acquired gives cast to the man's character, and consequence to the preacher's work. Mere cram by another mind, either by hearing or reading, will never produce culture, create power, or call forth effectiveness. On the contrary, in order to make and mature the man and render him an acceptable and effective teacher, personal effort must ever precede and prevent cram.

For near or far as eye can scan
Mind makes and manifests the man,
And lifts him nearest where he stood
When God pronounced him "very good."