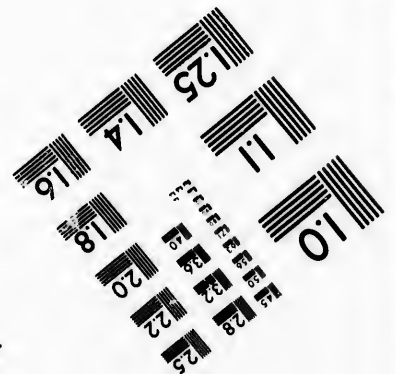
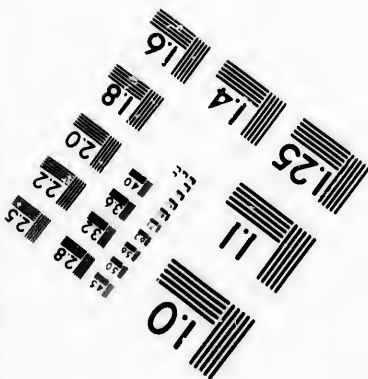
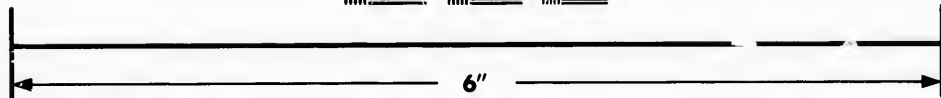
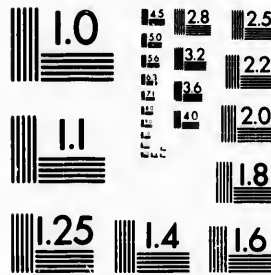


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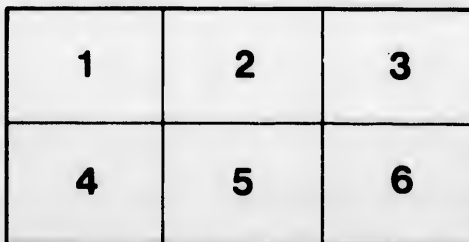
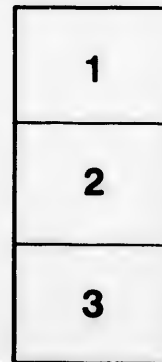
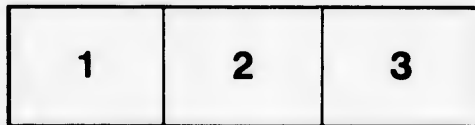
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DIAGNOSIS OF BRAIN POWER.

SPEECH OF

Lieut.-Colonel Hon. James Baker,

AT A MEETING OF THE

DOMINION NATIONAL EDUCATIONAL ASSOCIATION,

HELD AT

TORONTO, APRIL 18th, 1895.

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DIAGNOSIS OF BRAIN POWER.

—:O:—

The Hon. G. W. Ross, Minister of Education for Ontario, occupied the Chair, and called upon Rev. Dr. Milligan to open the meeting with prayer.

Rev. Dr. Milligan offered prayer, after which the following cablegram was read from the National Union of Teachers of England and Wales, now in session in Manchester, England :—" Your fellow members of one profession and one Empire send greeting and good will."

The Chairman delivered a short address, in which he congratulated the teachers on the splendid success of the meetings, and then, with complimentary remarks, introduced Colonel Baker.

Hon. Colonel Baker, Minister of Education, British Columbia, said :—We all owe a debt of gratitude to the Hon. Mr. Ross for having collected together, from all parts of this great Dominion, such an important assembly of teachers and others who are interested in the evolution of the human mind, in order that we may interchange our ideas, and, let us hope, advance our cause. We should hail with keen pleasure any organization which has for its effect the bringing prominently before the public that important section of society, the teachers of our public schools, because it is a class which, from the very nature of its calling and the magnitude of its responsibilities, should command our deepest respect and solicitude. The teachers of our public schools are the human instruments which mould the brains, and to a large extent the characters, of the children who are placed under their charge. They are indirectly arbiters of the national character, and it is, therefore, difficult adequately to measure the amount of honour and dignity which should be properly awarded to these architects of human nature. I may mention as chief of their responsibilities the force of example, which is one of the most subtle and far-reaching forces which shape our social existence, and we cannot attach too much importance to it; indeed, there are few of us who realize the extraordinary power which is exercised over us by the example of those by whom we may be surrounded. In illustration I may mention the common case of a man who is accustomed to drink only at his meals, but who becomes thrown into the society of others who take their drinks at odd times, when he gradually, and almost imperceptibly to himself, drops into the same habit—here then the force of example grows into a force of habit, and when that is extended to a number of individuals it becomes a force of custom which it is exceedingly difficult to change; and so it is with every other habit, and there is not one of us who is uninfluenced by the nature of his surroundings.

But if this is the case with the adult, how much more so with young children, whose brains are in a receptive state of growth, ready and eager to absorb impressions from surrounding objects?

Therefore it becomes the first duty of society so to order its educational system that it may be enabled to select the most honourable, the most able, and the most refined of its units as teachers of the young.

Unfortunately we find in this country—and, indeed, in every other country—a small minority of the people which is averse to advanced free education. It maintains that the three R's are all which are required, and that the public money should not be expended in educating the people beyond that limited domain of knowledge. On the other hand the large majority of the people, at least in all civilized countries, fortunately holds a contrary opinion; it maintains that the public money cannot be better expended, nor with greater permanent profit to the nation, than by cultivating the intellect of the child to its highest possible pitch, in order that it may be awakened to a perception of its inherent faculties, and by a healthy application of those derived powers it may contribute in each successive generation towards the lifting up of humanity to a higher and ever ascending standard. And in support of that supposition it cannot be denied that the brain of every child is a wonderful mystery. It may contain within itself hidden treasures of incalculable value, which can only be revealed by careful education, and it therefore becomes the bounden duty of the nation to search for those treasures which are born into it, and which are calculated to contribute so materially to its prosperity and to its advancement.

There is in human nature an inherent thirst for knowledge, a thirst, however, which could not have been satisfied without the assistance of that great incubator of liberty, the printing press, which for over 400 years has kept plodding away year by year, and century by century, enlarging and spreading the area of knowledge. By it, and through it, all the tangled impediments in the road to the study of the sciences were swept away, and the laborious conclusions of the mental faculties of one student were handed on to hundreds of others, to be restudied, amplified, and multiplied, until there burst upon this nineteenth century all those wonderful discoveries in science which have revolutionized society by practically annihilating space, and placing the whole of civilized mankind within talking distance of each other.

As a consequence any wave of emotion which affects a community in one part of the world is at once transmitted, with electrical rapidity, to every other community, however distant, and the result is a growing uniformity in thought, and also in action, which is gradually obliterating the boundaries and prejudices of nationality, so that every social problem now becomes actuated by what I may term a cosmic force.

A demand for free education was the natural corollary to this flood of human sentiment, the inherent thirst for knowledge had to be quenched, and now at the close of this nineteenth century, in all the civilized countries of the world, power is given to every child freely to fill up to the very brim the full measure of its intellectual capacity. Thus, after a lapse of over one thousand years, the dream, the hope, and the yearning of the first apostle of free education for the people, the good King Alfred, has become an accomplished fact, and I may also add that the Utopia of that great statesman, philosopher, philanthropist, and martyr of the sixteenth century—Sir Thomas More—is already more than half realized. Such are examples of the persistency of the evolutionary forces which are shaping mankind into a higher order of being.

But we must not lose sight of the fact that we are still only in the transition stage of this grand transformation scene between ignorance and knowledge. We have yet to be educated in the science of education, and we have to submit to the stern lessons of experience before we can hope to attain to anything approaching to perfection.

Society is gradually awakening to the fact that there are many grave defects in that system of general free education, which, it must be confessed, was somewhat hastily organized—it is beginning to recognize that to grant to young children the great boon of a free education, but at the same time to leave their crude receptive young brains unsweetened by any form of religious instruction, has failed signally in elevating their moral character, while the shameful sectarian discord which renders such a course expedient is sapping the very foundations of the doctrine of Christianity. Yes, and I have full warrant for this assertion from the very remarkable statistics emanating from the International Institute of Sociology, which was held in Paris last October, under the presidency of Sir John Lubbock. In discussing the effect of advanced free education upon crime, he stated that since the passage of the Act of 1870 for providing primary and secondary education in England, the number of children in English free schools has increased from 1,500,000 to 5,000,000, while the number of persons in prison has fallen from 12,000 to 5,000. The yearly average of persons sentenced to penal servitude for the worst crimes has decreased from 3,000 to 800; the number of juvenile offenders and delinquents has decreased from 14,000 to 5,000; and paupers have decreased by over 50 per cent. Let it be remembered that these remarkable results have been produced by an educational system which contains in its curriculum religious instruction of an unsectarian character. But now let us step across the English Channel into France, where the system of free education is quite as elaborate as that of England, but with this important exception: there is no religious instruction of any kind. What is the consequence? We find that crime has increased hand in hand with education. The cry goes up that education is filling the prisons. If we turn to the United States, to the Antipodes, to Australia and New Zealand, the statistics tell the same sad story, that crime increases directly as the increase in the number of godless schools. This offers food for very grave reflection.

But to descend from higher to lower things, I may add, with regard to education, that those unhealthy mental stimulants, frequent competitive examinations, have a tendency to engender conceit in place of sound learning, and they therefore become demoralizing both to the teachers and the taught. Then again, the multitude of subjects which are frequently forced upon the attention of the students are not calculated to strengthen their young and unformed brains; it is equivalent to cramming into the stomach more food than it can possibly digest.

We ought to ask ourselves this question: What is the object of advanced free education? Is it not to develop the latent talent of the child in order that it may become a citizen who, by example as well as by usefulness, may benefit the society to which either he or she may belong. The true end of knowledge should be to "provide a rich storehouse for the glory of the Creator and for the relief of man's estate." Therefore, the tendency of advanced free education should be to make the adult refined, that is, human in the best sense; and also practical, that is, capable of doing useful work. The instinct of labour must be cultivated; our intellectual food must be "converted into mental muscle, and not mental fat."

The two important objective points which I have enumerated can only be reached by the student through force of example, derived principally from the conduct of the teacher, and also by a curriculum which comprises practical with theoretical instruction. The eye, the ear and the hand must unite, in order to form and fashion the brain.

Thanks, largely, to the ability and energy of the Hon. Mr. Ross, the school system of Ontario approaches very nearly to perfection in this respect, and I am sanguine enough to hope that the people of British Columbia will recognize the great advantages which accrue from such a system, and that, although it must of necessity cost money, still it is the truest economy in the end, because the greatest results are obtained for the money which is expended.

The great reproach which is cast upon the educational system of the present age is that it tends to over-educate the children, and to render many of them unfit for the avocations into which they have been born, and that they fail to recognize the dignity of labour, whether it be that of the hand or of the head. If such were really to be the result of advanced free education, why, it would be better to abolish it altogether. But it is not so; experience has shown that such a result arises from the faults of the system, and not necessarily as a sequence to the cultivation of the mind.

You, in Ontario, with your admirably organized kindergartens, technical schools, and schools of practical science, have shown conclusively that properly organized advanced free education can turn out highly practical men and women. Indeed, it is being generally acknowledged all the world over that technical education tends to strengthen the brain, and gives to it greater power for understanding theory and adapting it to practice.

But no matter what curriculum may be devised, it must prove abortive unless it is administered by instructors who possess a special training and adaptability for the important task which is committed to their charge. Ontario has recognized the paramount importance of a special training for teachers, by the establishment of your admirable Normal Schools, which compare favourably with the best of similar establishments in other parts of the world; but as to me that a large portion of the training of a teacher should be devoted to special study of the brain and nervous system, and I use the term brain in this case in the common acceptance of the term as indicating the seat of intelligence. Taking it in that sense, the teachers of our public schools, so soon as they step upon the very threshold of their labours, find themselves confronted with a whole congeries of mysteries—a multitude of brains; all of them in a state of growth; each of them differing from the other; all of them sensitive to the lightest touch; each of them capable of being moulded—like a piece of potter's clay—into either an attractive or a repulsive form; and all of them requiring the greatest skill and judgment in the marshalling of their varying eccentricities.

Truly, it is no light task, and it is one which ought to be approached with the greatest gravity and sense of responsibility. The brain is such a mystery that it is difficult to define when its powers commenced or when they will end. It is a part of the evolution of life; of that life which science has taught us is common to the animal and vegetable kingdom, and which has been reduced in its visible form to the protoplasm or first germ, out of which the multitude of living things has sprung and is springing, ever moving onwards towards some mysterious end which is beyond our ken. It has merely been revealed to us so far that this being which we call life, the change from inorganic into organic matter, commences in every case with the protoplasm or first germ, and then spreads by innumerable channels away and away into higher and ever higher existences, until, with infinity of time, it shall touch the very hem of the garment of the Almighty.

With our limited knowledge, we are forced to confess that there are secret chambers in our brains, secret and unknown to those who surround us—yes, and secret and unknown even to ourselves, and they can only be unlocked and revealed by the key of temptation or of circumstance, whenever it may come; and there is not one of us who can foretell, with any degree of accuracy, what his or her conduct will be whenever that special temptation or circumstance shall arise. Therefore it becomes us to be very charitable in our judgments.

But the greater the mystery of the brain, the greater the necessity for the graduating trainers of it, the teachers of the young, to study its composition and to search for light and knowledge in order to be enabled to fashion it into its highest form.

There is an instinct in human nature that whispers to us of a higher existence. We talk of angels, and in doing so we picture an existence beyond ourselves. The nations worship intermediate deities, such as Brahma, Buddha, Zoroaster, Confucius, Christ, and Mohammed, and in each and every case the ideal is something superior to anything which is attained by existing humanity.

This beautiful ideal—the spiritual co-efficient which actuates the mechanism of humanity—is the force which is evolving mankind into a higher order of being, and religion, irrespective of sect, is its handmaid. But there is a counter-force in operation, namely, the gravitation of humanity towards its lower order of existence. There is a heaven, and there is a hell. Evolution beckons us towards the former; devolution drags us towards the latter; and between these two contending forces there exists that mysterious power in human nature to which we give the name of “free will.” It is a force which it is exceedingly difficult to define, yet we are all of us conscious of its possession because it forms the line of demarcation between a lunatic and a man who is responsible for his own actions. The man who has no volition over his actions is termed a lunatic; but any degree of will power which a sane man may possess must be exerted either to exalt or lower him in the scale of humanity, according as it is the resultant of the component forces which actuate him.

These component forces are not constant throughout his life, but they vary in direction and magnitude according to the impressions produced upon his brain by surrounding and accumulating circumstances.

We may, perhaps, be better able to appreciate the problem by supposing the case of an infant, born of highly intelligent and refined parents, being placed at its birth, if it were possible, in the society of gorillas or chimpanzees, to be suckled, reared, and brought up by them alone until it became adult. The antecedent probability is that such an adult would be bestial in its habits and manners, and also in its language, if it had any; but, mark you, not to the same degree as its associate gorillas or chimpanzees—and why not? On account of its inherited faculties. But if the same infant were placed at its birth under instructors, and in a society of the highest refinement, morality, and intelligence, it would as an adult be incomparably superior to its gorilla-reared simulaerum. In either case the brain would be fashioned by the impress of surrounding circumstances, and its reverberatory power would be proportioned accordingly.

Herein lies the grave responsibility which attaches to a teacher of the young, because it is in the power of an instructor, by virtue of his matured will force, to

impress the young and immature brains committed to his charge in such a manner as will either exalt or lower their inherited faculties. In point of fact, the awful responsibility is cast upon the teacher of graduating the scale of humanity. Surely, then, it is incumbent on society to take special care that the teachers of our public schools become adepts in the diagnosis of brain power.

It appears to me that the first step towards obtaining such a knowledge should consist in the study of embryology of heredity, of anatomy and neurology, because it is impossible intelligently to diagnose brain power unless we understand something about the sources of its production. So soon as that knowledge is acquired, the second step should be for the graduating teachers to study, under specially trained experts, the methods of the application of such knowledge to diagnosis of brain power of young children.

The study of embryology has advanced greatly in the last few decades, and it has clearly revealed to us the intimate connection which exists between man and all placental animals. Researches into heredity confirm this connection by detecting certain inherited habits and instincts which are common to man and the nearest approach to man in the lower order of animals, namely, the ape. The study of anatomy and neurology teach us how impressions upon the eye, the ear, and the skin are transmitted by the nervous system to the highly sensitive brain, where they are stored up according to its varying capacity and quality, in order that they may afterwards be reverberated by that mysterious power which we call memory. All these scientific studies have taught us, by the process of induction and deduction, or, in other words, by the indentations upon and the reverberations from the brain, that intelligence is measurable by the capacity and peculiar convolutions of the brain.

For example, the brain of the lowest order of man is about twice the size of the brain of the highest order of ape. Yes; but we cannot take much comfort out of that, because we find that the difference in the size of the brains of the highest and lowest order of man is far greater than that which exists between the lowest order of man and the highest order of ape. Again, the span of intelligence between the highest and lowest order of ape is far greater than that which exists between man and the ape. For a long period it was supposed that certain peculiar portions of the brain, known under their scientific nomenclature as the posterior lobe, the posterior cornu, and the hippocampus minor, were peculiar to man and were not to be found in the ape; and that profound scientist, Professor Owen, under whose instruction, by-the-by, I had the great honour of being placed, held to that opinion to his dying day. But, alas! even that comfort is now denied us, because the more exact researches of Professor Huxley and other scientific celebrities have proved beyond any shadow of doubt that these peculiar properties of the brain are to be found in the ape as well as in man. There are certain inherited habits and tendencies between man and the ape which are worthy of mention.

In studying the habits of gorillas and chimpanzees, it was observed that they make their beds at night in trees, with sticks and leaves, and that they are very particular about their nightcaps. I use the term nightcap in its literal and not in its spirituous sense. Well, they cover their bodies with leaves, and particularly their heads, and they sleep with the hand under the head, palm upwards. Now, it is a well known fact that children and also adult human beings have a strong tendency to place the hand under

the head upon going to sleep, even though they may have soft feather pillows to rest it upon; and, moreover, I can strongly recommend any of my hearers who may suffer from insomnia to try placing the hand under the head, palm upwards, and in nine cases out of ten they will go off comfortably to sleep, but whether they will dream of their gorilla ancestors I am not prepared to predict. Then, again, the prehensile tendency in the hands of infants, and the peculiar love for climbing trees, which is common to boys and girls alike, all point to inherited tendencies from our simian ancestors.

There is a wild tribe of men called Veddahs in the island of Ceylon who have no fixed habitations, and who make their beds at night in trees with sticks and leaves, very much after the fashion of gorillas and chimpanzees. Then, again, the love of sport, which is so strong in some natures (I have it myself), is probably inherited from primitive man, when the supply of food was dependent upon the sportsman, and he became renowned in proportion to his success. Again, the taste for keeping game until it becomes high probably dates back to primitive ages, when it was necessary to hang venison and other kinds of game in trees or caves for future use.

But if all these inherited habits and tendencies still cling to us after a lapse of countless ages of time, how much stronger and more varied must those tendencies be which we have inherited from our numerous and more recent ancestors, and how complicated the growing brain of a young child must be when it is pregnant with inherited tendencies utterly unsuited, maybe, for the circumstances into which that child has been born.

Hence the care and caution which are necessary in diagnosis of brain power, and brain tendencies, and the patience and perseverance which are required on the part of the teacher in order to be enabled to divert the growth of the brain into the most elevating channels.

To show how much may be accomplished by care and patience on the part of the teacher, I will give a case which came under my own notice. It was that of a boy at one of our great public schools in England, who, although a good boy in other respects, was so densely stupid that the masters could do nothing with him. A consultation was held, and it was determined to ask the boy's parents to remove him from the college. The house tutor went to inform him of the decision, and to his astonishment found the boy in the college library and museum absorbed in a deep work upon natural history. Investigation proved that the greater part of the boy's play hours had been passed in the library and museum studying works on natural history. The house tutor asked that the decision for the boy's removal might be rescinded, and that he might be allowed to take him in hand. He did so, and set him to work on natural history and science, and immediately the latent talent was evoked, the special inherited impress upon the brain at once responded to the call, and so far from its being necessary to remove that boy from the college, he became one of its most brilliant ornaments. Now, in this case, the boy's thoughts were so concentrated upon his one talent that he became absent and oblivious to other impressions; but no sooner did his mind get free play upon its special channel than it at once relieved the repressing force upon his other faculties, and left them at liberty to expand. Had it not been for the care and patience of his house tutor, the whole tenor of that boy's life might have been changed.

One of the greatest difficulties which meet the efforts of a teacher is diagnosis of the neurological symptoms of his pupils. The child is full of emotions, the immature buds of character, and any rough or inconsiderate treatment of such emotions may, in some cases, ruin a child's character for life. The nervous systems of some children, and also of adult human beings, are so extremely sensitive that they require to be treated with the greatest judgment and circumspection. In illustration of how sensitive some nervous systems may be to exterior vibrations, I will mention the case of a young lady of my acquaintance who was an accomplished musician. She married a man who had the misfortune to be stone deaf. Yet, strange to say, he could appreciate her music, and always knew when she was playing in the same room, even when he had his back turned towards her. In this case the waves of sound must have vibrated a highly sensitive nervous system and set it in motion.

We ourselves experience something similar in the case of sad or lively music. Why do we call it sad or lively? On account of the vibrations produced upon our nervous system by the differing waves of sound.

There are attractions and repulsions in human nature which we all of us experience, but find it difficult to account for them, but there is no doubt that they vary in a large degree according to the sensitiveness of the nervous system of the people concerned. Beauty of face and beauty of form act upon the eye, and thence by the nervous system to the brain; but the same face or form may affect different people in very varying degrees.

There is a force we call sympathy, which is highly attractive when it meets a similar indent upon another brain. Children and dogs are quick in discerning this force, and in responding to it. Instances might be multiplied by the thousand to prove how extremely sensitive the brain is to impressions from surrounding circumstances, and how it may be exalted or lowered according to the nature of the impressing objects.

But is not this the best possible argument we could have in favour of advanced free education for the people?

Because the higher the education of each unit of society the greater must be the elevating force of surrounding circumstances, there is a reflex action between brain and brain.

A unit of society is surrounded by other units, each of them possessing a reverberatory power of brain. If the brain of each unit of society is indented by a force which is opposed to the gravitation of humanity towards its lower order of existence, then the reverberatory power of the brains of the whole of society must tend to raise humanity up the scale of evolution, and vice versa. Therefore, the greater number of brains which are properly indented the greater must be the elevating force of surrounding circumstances, and the higher humanity must rise in the scale of evolution.

But it is education, properly organized, which indents the brain on the upward scale, hence the paramount importance of a general education of the highest order.

Exception may possibly be taken to a portion of my argument on the plea that it tends to reduce human thought and human action down to a mere scientific formula, and that it does not leave room for the ethics of religion with all their beautiful emotions and holy aspirations.

But I think that a little consideration should dispel such an erroneous conclusion, because, although the revelations of science have undoubtedly taught us that man is only a function in a long scale of evolution, a mere speck on the boundless expanse of creation, still the very fact of his being a function in evolution must assure him that he has had a past, that he has a present, and that he will have a future.

He recognizes, by virtue of his undoubted inherited tendencies, his intimate connection with the past; he experiences a power of free will for his guidance under the circumstances of the present; and he should therefore have unbounded faith in the continuity of his existence in the future. To my mind there could not be a more beautiful manifestation of the analogy between science and religion than our own pure Christian faith.

The man Christ appears among men, is seen by them, speaks to them, reveals to them in His own person a higher aspect of humanity, a Godhead, and then disappears along the path of evolution, beckoning to His fellowmen to follow Him.

God made man in His own image. Is not, then, the doctrine of the Trinity the verisimilitude of the doctrine of evolution? The Father is God, the Son is God, and the Holy Ghost is God, and yet there are not three Gods, but one God.

So, also, there is the man God of the future, the man of the present, and the man of the past, and yet there are not three men, but one man, who is ever ascending the path of evolution.

But I must not detain you any longer. I have endeavoured, I fear but imperfectly, to emphasize the grave responsibility which attaches to a teacher of the young; to point out that the brain of every child which is committed to the charge of a teacher is pregnant with inherited tendencies, coupled with a power of free will which may be directed, by a stronger and more matured will force, towards either a higher or lower standard of humanity, according to the degree of judgment which is observed in diagnosis of brain power; that the higher the education of each unit of society the greater must be the elevating force of surrounding circumstances; and that it therefore becomes the bounden duty of society to endeavour to raise each of its units to the highest possible level.

Such being the case, it is an obligatory part of human effort to give a due portion of its labour in the form of taxation in order to provide the most efficient organization for the education of the people. Turning, then, to those who would mete out to the rising generation but a mere pittance of education in the form of the three R's; who, conscious of their own knowledge, would selfishly grudge a similar measure to their poorer brethren who would cast the welfare of our poorer children upon the wayward element of chance; who maintain that we should not sow now, because, forsooth, we cannot reap now. To such as those I would say, in the words of one of America's deepest thinkers:—

Rich is the harvest from the fields
Which bounteous nature kindly yields,
But fairer growths enrich the soil
Ploughed deep with thought's unwearyed toil,
In Learning's broad domain.

(Loud and prolonged applause.)

