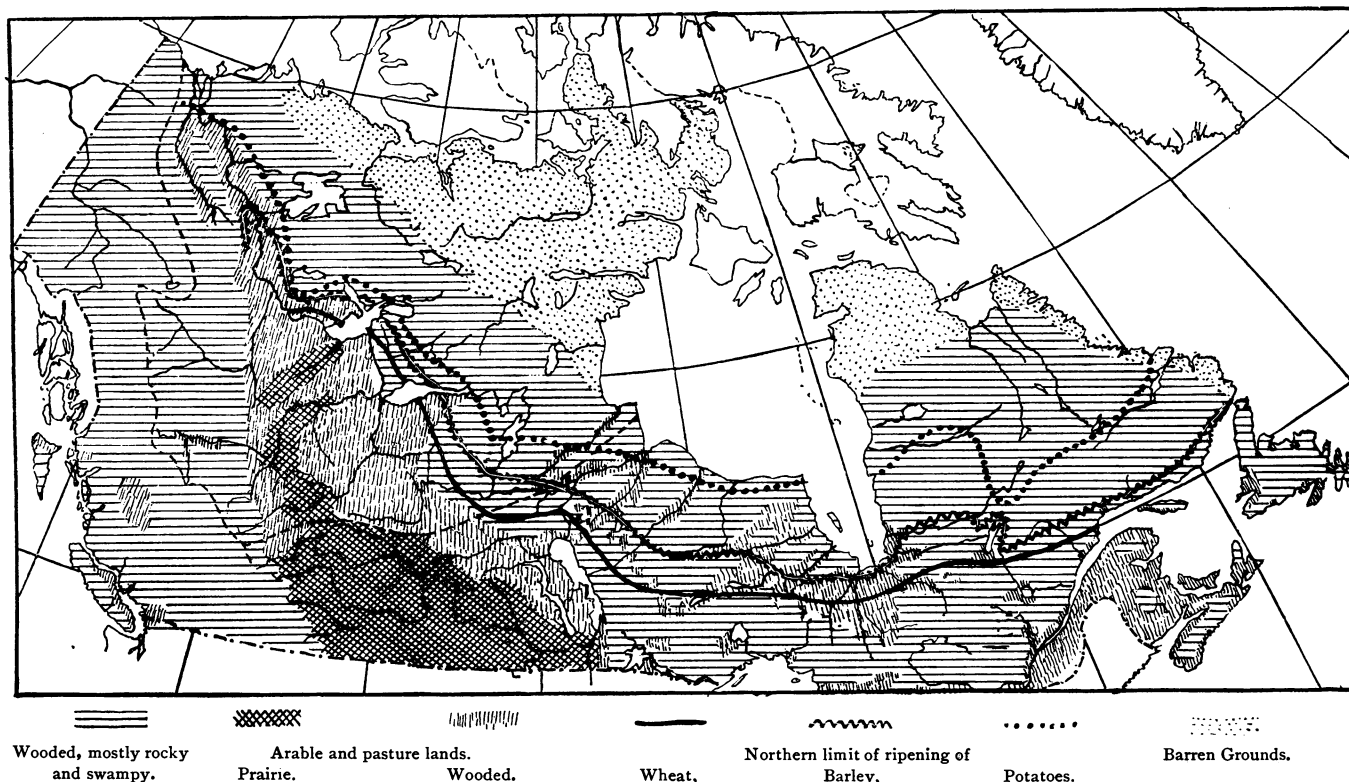


ment of the fertile prairie region on the Saskatchewan advances, these regions and their produce will become more valuable. It is worth remarking in this place, that the region near the southern limit of forests is far more valuable than the arid prairies near the forty-ninth parallel, adjoining Dakota and Montana, which are crossed by the Pacific Railroad. The political considerations which have determined the southern location of this road will undoubtedly prove to have retarded the growth of the Canadian North-West Territories. The information regarding the forest-covered area on the Mackenzie River, north of Great Slave Lake, is very scanty, and it appears doubtful whether the committee's views regarding its value as a pastoral area are justified.

On the whole, it appears that the south-western portions of the Mackenzie basin are far more productive than they were formerly believed to be, and that they are capable of supporting a consider-

pancy as that to which we refer, impossible any longer, for it brings within the reach of every teacher and student in the land a scientific and practical and modern treatment of the subject of memory and its cultivation. Professor Harris, the editor of the series, prefaces Mr. Kay's book with an interesting introduction, in which he sums up the result of the author's discussion. He says, for example, "Memory is not one faculty, so to speak, but a condition of activity of all faculties. There is one memory of places, another memory of the names of places; one memory of persons, another memory of the names of persons; still another memory of dates; another of principles and causes; and so on. The cultivation of one species of memory may assist or it may hinder another kind of memory, according as the mental activity by which the attention is fixed on one subject aids or hinders the mental activity of the other kind of memory" (p. vi.). We are disposed to think that Profes-



able population. The country is far from being rich, and, while more promising areas are open to settlement, progress will be slow; but there can be no doubt that in course of time its prairies, woods, and mineral resources will give support to thrifty communities.

#### BOOK-REVIEWS.

*Memory: What it is, and how to improve it.* By DAVID KAY. New York, Appleton. 16°.

THIS volume, the eighth in the International Education Series, is in some respects the most important and interesting yet issued. We by no means underrate the value of Rosenkranz's 'Philosophy of Education,' nor that of Mr. Brown's translation of Preyer's 'Die Seele des Kindes;' for those works are broadening and stimulating, and should be read by all those teachers who are seeking to perfect themselves in the philosophy of their profession and to extend their knowledge of the phenomena of the child-mind. But Mr. Kay, in his treatment of memory, has had an opportunity to discuss, in the light of modern physiological and psychological research, a subject about which there has been a vast amount of almost wilful misunderstanding and ignorance. The commanding place which verbal memory occupies in the schools of to-day is a relic of the system of teaching current for the last five hundred years, and is the result of permitting educational practice to lag far behind psychological investigation. Mr. Kay's book makes such a discre-

sor Harris does Mr. Kay an injustice in stating (p. xiii.) that Mr. Kay has not discussed the physiological side of memory with reference to the most recent special researches in physiological psychology. To be sure, we find no reference to Wundt, Volkman, James Ward, Ebbinghaus, Fechner, or Meynert; but Ribot is quoted and referred to with great frequency, and we have also noticed quotations from Michael Foster, Dr. Carpenter, Dr. Maudsley, George Henry Lewes, Bernstein, E. Hering, Müller, Dr. L. S. Beale, Helmholtz, Du Bois-Reymond, and others, who are certainly in touch with the most modern theories in the branch of knowledge referred to. In fact, so far are we from agreeing with Professor Harris, that we are disposed to think that the first four chapters of Kay's book, which discuss 'Memory,' 'Matter and Mind,' 'The Body,' and 'The Senses,' form the most accurate and concise introduction to the study of physiological psychology that we have yet seen.

Every reader will be struck with the number of the author's citations. They are more than one thousand in number, and are taken from over two hundred authors. They in themselves would form an interesting *olla podrida* of what has been said and written about the subject with which the book deals. The author strikes at the current misconception of memory in the first pages of his book, and remarks (p. 13) that "a leading error that arises in regarding the memory as a single faculty is the belief, that, in whatever direction we exercise it, we improve it as a whole. This, however, is very far from being the case. If we exercise it only in one direction, we

improve it only in that direction. The exercise of the ear in hearing does not improve the power of vision, nor, while we strengthen the memory for sounds, do we improve that for sights. Even in a single sense or faculty, we find different forms and degrees of memory, as in sight for persons, places, forms, colors, and the like. Hence we may cultivate the memory for persons without at all improving that for places, and a good memory for colors may afford little help toward the remembrance of forms. . . . Another error that may be traced to the same cause is that of regarding the memory only or chiefly as it is manifested in its lower forms, and hence depreciating or undervaluing its importance. . . . The memory for names and words is the lowest form of memory, and fools and even idiots are sometimes found to manifest it in a very remarkable degree. Hence to judge of the value and importance of memory simply from the lower aspects of it is manifestly unfair. The memory for words is only one form of memory, besides which there are memories for ideas, for processes of reasoning, for creations of the imagination; and to say that memory interferes with efficiency of any of the other faculties is to regard as one thing what is in reality many things, and to confound the lower forms of it with the higher." The author distinguishes three kinds of forms of memory. The first, or lowest, is the local or verbal memory, which is the power of remembering facts in the order in which they occur, or words in the order in which they were addressed to the individual. This form of memory is very ready, and more or less imposing; it is nevertheless a manifestation merely of a mind which is very receptive to sense-impressions, and which consequently recalls them with great accuracy.

The second and higher form of memory is that in which not merely an individual past state of the mind, with its attending circumstances, is recalled, but where a number of past states having some resemblance to each other are reproduced at the same time. In the first kind of memory the associative principle at work was contiguity; in the second form it is similarity. The third and highest form of memory is that in which past ideas or past sensations are, as it were, imaged forth as if they were objects of actual perception. Wherever we find this power of imagination most highly developed, there we have memory in its most perfect form.

It will be seen that Mr. Kay is writing strictly on physiological lines when he makes this division of memory and his estimate of the importance of its various manifestations. He proceeds from the fact that there is a nervous discharge to correspond to every mental change, and that in the case of memory the discharge in question takes place in the same tract as it did when the presentation, now recalled, was originally perceived. He does not, however, confine himself to the opinion generally held by physiologists, that the movements on which our recalled sensations depend are confined to the brain, which may therefore be regarded as the sole seat of the memory. Mr. Kay says that this is the case in many instances; for instance, where the previous sensation is but imperfectly recalled. He contends, however, that where the previous sensation is brought back with any degree of vividness, as in the highest form of memory, the motion is not confined to the brain, but is conducted "also to the connecting nerves, and often to the special organ of sense, as in the original sensation, with this difference: that in sensation the motion originates in the external organ, and travels inward to the centre; whereas in recollection it originates in the centre, and passes outward to the outer organ" (p. 33). He supports himself in this opinion with a quotation from Professor Bain, and with some interesting experimental cases which we have not space to record. As a result of this opinion, the author can conclude that the senses are not only necessary for receiving impressions, but are necessary also for imaging them in the memory; and the muscles are not only necessary for the performance of actions, but necessary also for the full remembrance of them. Hence not the brain alone, but the whole body, is the true seat of memory.

We have given this rather full digest of Mr. Kay's views, because it is necessary, in reading and estimating the book, to know on precisely what foundation it builds. We cannot follow him over the remaining chapters of his book in as much detail, but we most cordially recommend his pages to the attention of all students of memory, and all who are engaged in the practical work of teaching. What he says about attention and association is, of course,

well known to all save those who spend large sums of money in endeavoring to train the memory according to some secret and newly discovered "physiological" process. A careful study of Mr. Kay's book will dispel all illusions concerning such memory-training, and also make it plain that mnemonics as popularly understood is a self-evident absurdity; in that, instead of grasping a natural and real association, it calls up an artificial one, and makes it necessary for the mind to retain not merely the things associated, but the artificial bond of association which has been placed between them.

Mr. Kay's chapter on "How to Improve the Memory" is the shortest in the book, and reasonably so. If a clear impression of a sensation increases the likelihood of its being remembered, it is evident, that, in order to train the memory, we must begin by training the attention; if an idea can be the more readily recalled according as it is more easily associated with other ideas, then it is evident, that, after training the attention, we must train the power of associating ideas—not in an artificial and superficial way, but in accordance with the real connection existing between the ideas themselves; and, lastly, if there are memories, and not a memory, practice and exercise of any particular kind of memory is necessary in order to make it efficient. These are the practical rules resulting from Mr. Kay's treatment, and they are rules fully justified by physiology and psychology. The author has given us the best and most compact, the most accurate and the most practical, treatment of memory that we know of.

*Case of Emperor Frederick III.* Full Official Reports by the German Physicians and by Sir Morell Mackenzie. New York, Edgar S. Werner. 12°. \$1.25.

THIS volume of 276 pages gives a complete account of one of the most celebrated cases of modern times, beginning with the month of January, 1887, when the Crown Prince of Germany felt the initial symptoms of his fatal illness, to June 15, 1888, the day on which as emperor he succumbed to its ravages. Twenty-two illustrations serve to make the reports of the physicians more intelligible than they otherwise would be. These represent the growth in the larynx at different stages of its progress, and the trachea after the operation of tracheotomy had been performed, with the canula through which air was admitted to the lungs. A perusal of this book leaves the disputed questions no nearer a solution than before, and we must be content to wait until sufficient time has elapsed to permit the subject to be considered from a purely scientific standpoint, without bias, either national or professional.

#### AMONG THE PUBLISHERS.

THE January number of *The Chautauquan* is replete with valuable and interesting matter. The following is the table of contents: 'Gossip about Greece,' by J. P. Mahaffy, M.A., of Dublin University; 'Nicias,' by Thomas D. Seymour, M.A., of Yale University; 'Greek Mythology,' by James Baldwin, Ph.D.; 'Sunday Readings,' selected by Bishop Vincent; 'Music among Animals,' by the Rev. J. G. Wood; 'The Effect of Explosives on Civilization,' by Charles E. Munroe, chemist of United States Torpedo Corps; 'Hospitals,' by Susan Hayes Ward; 'The Indians of the United States,' by J. B. Harrison; 'An Autocrat in Feathers,' by Olive Thorne Miller; 'Educate the Hand,' by Dr. T. L. Flood; 'The Chinese in the United States,' by Wong Chin Foo; 'Finland and the Finns,' by Bishop W. F. Mallalieu, LL.D.; 'Temperance Laws in the States and Territories,' by the Hon. H. W. Blair, United States Senator from New Hampshire; 'Working Girls' Societies,' by Grace H. Dodge; 'Alexander Hamilton,' by Coleman E. Bishop; 'Chapultepec,' by Eugene McQuillin; besides the usual editorial and C. L. S. C. departments. The poetry of the number is by Ada Iddings Gale and Hjalmer Hjorth Boyesen.

— The December number of *The Canada Educational Monthly* opens with an article on 'Some Antecedents of Montreal,' by Sir J. William Dawson, followed by the second part of the annual convocation address of President Sir Daniel Wilson of University College, Toronto. The first instalment of a brief history of Knox College, from the pen of Professor Gregg, next appears; then an article by Professor Fletcher, of Queen's, on 'University Matricula-