

For the REVIEW.]

The Life-History of a Butterfly.

A butterfly's life is varied and interesting in every stage of its development. Butterflies, like other animals, of course have the egg stage, but in addition they pass through two more stages, viz.: the larva or the caterpillar stage, the chrysalis stage, and finally that of the imago or perfect butterfly. The butterfly generally deposits her eggs on the under sides of leaves, either singly or in pairs. The eggs are beautiful objects when viewed under the microscope, being of all shapes, and also exquisitely carved. The female selects the proper plants upon which, when they hatch, the young larva can feed. Thus the cabbage butterfly (*Pieris Rapæ*) selects the cabbage as the plants so deposit her eggs upon, so that when the caterpillars emerge they have their proper food within reach. The larva stage is the one in which so much damage is inflicted upon fruits and the foliage of trees. After emerging from the egg the caterpillar begins to feed on the food within reach, and grows so rapidly that it attains enormous proportions, and is forced to cast off its skin several times, or to molt. At last it ceases to eat, and securing a suitable position, transforms into a chrysalis. The chrysalis stage is a stage in which vast changes are taking place to fit the insect for a butterfly's life. Instead of the mouth of a caterpillar (which is very tough and strong) a weak mouth, adapted for sucking purposes is acquired, the antennæ and eyes appear, the eyes being compound while a caterpillar's eyes are simple. A compound eye is one that is made up of a number of facets, as in a dragon-fly, where there are as many as 12,000. The animal also acquires wings and legs, all of which can be distinctly seen even in a chrysalis, the wings and other appendages being then folded upon the breast. The chrysalids hang in all situations, some selecting spots where they can hang securely by the tail (as in *Papilio asperias*), and being supported by a silken girdle round the waist. Others hang by a pad of silk on the tail, and are free to swing to any breeze.

After being in these positions for a considerable period (often all winter), the insect emerges from the chrysalis case, as a perfect butterfly or imago. But small parasitic insects are in abundance, and these entering into the body of the chrysalis, soon terminate its life. Thus ends the transformation, and having passed through the three successive stages of growth or development, the insect is said to have a perfect metamorphosis. In the last stage no damage is inflicted, but the insect has now become directly being a means of transferring pollen from flower to

flower. Thus the formation of seeds and of new plants is assured, while the butterfly gets nectar in return for its trouble. With a view to insect fertilization, many plants strive to attract them either by colour, smell, or nectar.

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For the REVIEW.]

National Educational Association.

The National Educational Association of the U. S. met at Asbury Park, N. J. July 10-13. Over 5,500 enrolled and much interest and enthusiasm was aroused by the presence of so many educationists at this beautiful seaside resort. The winter population of 10,000 increases every summer to 50,000. Hotels and cottages with every modern convenience gave reduced rates to the teachers and much kindness was shown by the residents in every possible way. To me, a Nova Scotia teacher accustomed only to small teachers' gatherings, this great meeting was unique. It is good for teachers to come together and get new ideas and higher inspirations; to discuss improved methods of teaching that help us to leave the beaten paths and go in for improvements and progress.

The general meetings were held in the large auditorium in the mornings and evenings and were ably presided over by President Lane, Chicago, while the departmental meetings were held in the afternoons in the different churches and halls. The different departments of the association were child study, kindergarten, elementary education, secondary education, higher education, normal education, manual and industrial education, art education, music education and business education. Many interesting papers were read, followed by able discussions showing up the subjects in their various phases. Dr. Peabody of Chicago, speaking of the educational value of the Columbian school exhibits, said that the Canadian exhibits showed that the "Canadian school system was central in authority and widely diffused in its application." Ontario beats all countries of the New World in employing only trained teachers. Dr. J. A. McLellan of Toronto, a native of Nova Scotia, read an able paper on "The Ethical Aim in Teaching Literature." The child study and kindergarten departments were extremely interesting. The necessity of studying the child and giving him the right literature and training early, was shown.

Miss Wheelock of Chauncy Hall, Boston, in a stirring address, showed the ideal relation between the kindergarten and the primary school and the value of the kindergarten, which develops through self-activity, as a foundation for sound instruction.

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