

TRAVELING INTO THE WORLD OF BUTTERFLIES AND MOTHS: PART I

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[Ed. Note: This article is the first in a four-part series on the study and science of Lepidoptera by Vladimir Kachan from Belarus. Mr. Kachan is a long-time, avid collector and exhibitor of Lepidoptera on stamps who has written articles for several philatelic publications dealing with this topic. He was a member of the former Butterfly and Moth Stamp Society as well as the former Philatelic Lepidopterist Association. You can contact him via email at: vladimirkachan@mail.ru, or post at: P.O. Box-36, BY-220089, Minsk-89, Republic of Belarus.]

Introduction

Butterflies are the most beautiful creations of nature, the top of its artistic mastery, undoubted masterpieces of evolution. Moths are often regarded as less engaging, but with their diversity of shapes, sizes, and colors, they are as fascinating as butterflies. They believed in Ancient Rome that butterflies had come from the flowers torn from their plants.

From the point of view of historical development, butterflies and moths are a comparatively young order of insects. The lack of paleontological data does not allow determination of their age even approximately. But on the grounds that all of them live inseparably linked with the existence of flowering plants, we may suppose that butterflies existed already at the end of Cretaceous period of the Mesozoic era. Moths existed most probably even earlier, perhaps already in Carboniferous period.

More than 170 thousand identified species of butterflies and moths, spread all over the world except in the Antarctic. Their sizes vary from 2-3 millimeters to 20-30 centimeters. There are many relic and endemic species among butterflies and moths, which are the adornment of nature, have great scientific significance, and bring real joy and boundless aesthetic delight. Great is the significance of butterflies as pollinators, and the chrysalis of Bombyx moths are used as a raw material for silk production. The hundreds of different species of butterflies and moths surprise us with their beauty and a creative peak of perfection.



Queen Liliuokalani
Hawaii Sc#52, 1898



Oldest entire postal with flying butterfly of Thurn and Taxis
Germany, 1863

Butterflies and moths have a wide distribution in philately. About 250 countries and territories have dedicated postage stamp issues to them. The first stamps with the pictures of moths appeared on the issues of Netherlands India in 1902, Curaçao in 1903, and Surinam in 1904. But the best stamp among the first issues is considered to be from Hawaii, issued in 1898, which depicted a hair-pin in the shape of a butterfly on the queen's head.

1. Study of Butterflies and Moths in the 17th to 20th Centuries

NATURALISTS, ENTOMOLOGISTS, and BIOLOGISTS

Butterflies and moths are not only beautiful with a variety of forms, but also their life is very interesting. Their transmutations and alternations of stages of development attracted the attention of nature-lovers from time immemorial. But only in the 17th Century (1648) was the first book published that described exotic insects, *Historia Naturalis Brasiliae*, by Georg Marcgrave and Willem Piso. Dutch doctor Jan Swammerdam (1637-1680) in *Book of Nature* laid down the foundations of entomological anatomy and introduced the notion of metamorphosis of insects. Painter I. Hudard studied transmutations of butterflies for 40 years. The results of his work was the book, *Metamorphosis and Natural History of Insects*, published in 1662.

In the 17th and 18th Centuries, Maria Sibylla Merian (1647-1717), a German painter, naturalist, engraver, and publisher, achieved world-wide fame thanks to her scientific-artistic albums that showed and proved the phenomenon of metamorphosis of insects. Between 1699 and 1701, she travelled to Surinam. The result of her observations and sketches of that trip was *Metamorphosis of Surinam Insects*, published in 1705. Merian became a pioneer of the South American insect world thanks to her detailed and colorful depictions and the popularization of the metamorphosis of insects. Tsar Peter the Great purchased the most precious of Merian's publications, collections, and watercolors for Russian museums and libraries. In 1983, in memory of Merian, the postal authorities of Surinam issued a series of 12 stamps with the pictures of butterflies depicted by Merian during her trip to South America.



Maria Merian
Germany Sc#1479



Carl von Linné
Sweden Sc#298a

In the middle of the 18th Century, studies of entomofauna of vast territories began. The most valuable contribution to these studies was by Swedish scientist Carl von Linné (1707-1778). He described the zoological scheme, terminology, and classification of animals in the first edition of *Systema Naturae* (1735). In 1746, he published *Fauna Svecica* where he rebuilt the classification of animals, determined new genera, separated species from varieties, and gave simple names to species. For insects, he also studied the plants on which they lived. Carl von Linné described about 2000 species of insects and a considerable number of them were butterflies and moths.

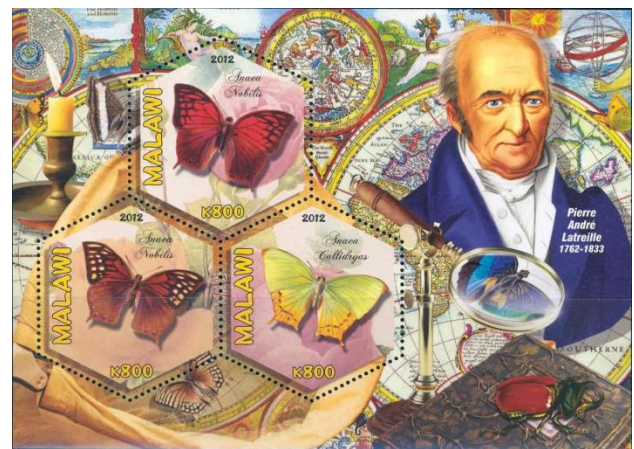
English naturalist Edward Donovan (1768-1837) made a trip through the countries of Oceania between 1800 and 1805, during which he collected and described a great number of insects, including butterflies. He founded the London Museum and Institute of Natural History in 1807. Another English naturalist, Adrian H. Haworth (1767-1833), who studied the butterflies of Europe, published *Lepidoptera Britannica* in 1829.

French entomologist Pierre André Latreille (1762-1833) described many species of insects from South America, including butterflies. In 1831, he proposed an improved system of classification of insects, approximately corresponding to the one currently in use.

In 1835, Italian biologist Agostino Bassi (1773-1856) wrote a work on the parasites of silkworms.

Cuban biologist Felipe Poey (1799-1891) was an investigator of the wild world of Cuba, including butterflies. The Cuban Society of Natural History was named after him, and the Cuba has repeatedly dedicated postage stamps in his honor.

Famous English naturalist Charles Darwin (1809-1882) was a founder of evolutionary studies about origin of animal and plant species by natural selection. During his world cruise aboard the ship HMS *Beagle* between 1831 and 1836, he made many observations on zoology, geology, anthropology, and ethnography. In the virgin forests of Brazil he, for the first time, saw a butterfly producing a sound with the help of special structure on its wings. From that trip, Darwin assembled a large entomological collection. After the trip, he published *The Diary of Investigation*, where he described for the first time the variety of South American and Islands animals. In his book, *The Origin of Species*, Darwin described the connection



Pierre André Latreille
Malawi (2012 not catalogued)



Charles Darwin
Chad (2014 not catalogued)

between a flower and an insect-pollinator. Darwin's work showed the great significance of the problem of plants pollination for the science and practice of agriculture.

Russian naturalist Karl Frantsovich Rul'e (1814-1858) worked out a wide program on ecology of animals. He studied moths—pests of winter crops. He wrote a work about harmful caterpillars of moths in 1847.

English naturalist Henry Walter Bates (1825-1892) spent 11 years in Brazil on the Amazon. There he assembled a large collection of insects including butterflies and moths—more than 14.7 thousand species, including eight thousand previously unknown to science. He discovered the phenomenon of mimicry in 1862. The case of imitation by edible species taking the coloring, shape, and behavior of inedible species is called “Batesian mimicry” in his honor.



Henry Walter Bates
Comoro Islands Sc#1053c



Tyan-Shansky
Russia Sc#1615

Russian geographer and entomologist Pyotr Semenov-Tyan-Shansky (1827-1914) devoted his entire life to the collection and study of insects, mainly of beetles and partly of butterflies. With an entomological purpose, he visited the western, central, and southern regions of Russia, and at the 1880s, he made big entomological collections in the Pyrenees, the Italian and Swiss Alps, and Germany. He was one of the founders of the Russian Entomological Society, and from 1889 to 1914, he was its president. The collection of insects, made by Semenov-Tyan-Shansky includes about 700 thousand specimens and it is kept in Zoological Museum of Science Academy of Russia.

French entomologist Jean Henri Fabre (1823-1915) investigated the life and instincts of insects. In his experiment with moths, he ascertained that males find females with the help of a sense of smell at a considerable distance. He described his observations of the life of insects in ten volumes of *Entomological Memories*.

Russian biologist Alexander O. Kovalevsky (1840-1901) was one of the founders of evolutionary embryology and physiology. He studied texture and functions of secretory organs of invertebrates, including butterflies and moths.

Russian entomologist Nikolai Yakovlevich Kuznetsov (1873-1948) studied the fauna of butterflies of Russia as well as the European and Asian parts of the Arctic. He also studied the fossil insects from the Paleogene. He wrote works on systematization, morphology, ecology, physiology, and paleontology of insects.



Artwork for entomologist J. H. Fabre issue
Monaco Sc#874

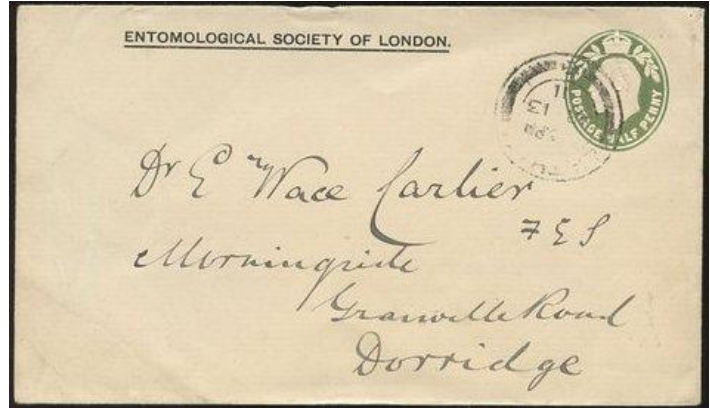
Russian zoologist Mercury S. Gilyarov (1912-1985) created a new branch of biology—soil zoology. He wrote works on soil pests, the role of animals in soil formation, the evolution of insects and other Arthropoda, the conformity to the laws of natural selection, and zoological methods for diagnostics of soils. He wrote about taking measures of fight against soil pests, including the caterpillars of moths, in 1954. From 1973 to 1985, he was the president of the Entomological Society of the USSR.

Many other naturalists and entomologists have studied butterflies and moths and made great contributions to the development of entomology. Among them were: Johan C. Fabricius, Johann C. Esper, Jean B. Godart, Josef J. Mann, Otto Staudinger, Kurt Lampert, Peter S. Pallas, Eduard A. Eversmann, Nikolay G. Yershov, Grigory Y. Grumm-Grzhimaylo, N. A. Kholodovsky, and Boris N. Shvanvich, but the postal authorities have not yet issued stamps to memorize them.

SCIENCE ORGANIZATIONS

In many European, Asian and American countries there are entomological societies that unite the scientists who work in the field of entomology. The oldest among them are the French Entomological Society founded in 1832 and the Royal Entomological Society London founded in 1833. The main tasks of these societies are the investigation of the fauna and biology of insects, the development of measures to fight pests, and the protection of useful species.

Most developed countries have natural history museums with permanent collections and expositions of butterflies and moths. The oldest one is the National Museum of Natural History in Paris, France, founded in 1793. Its collection of butterflies and moths include 1.5 million specimens. The most famous museum is the British Museum of Natural History founded in 1881. It has the largest collection of butterflies and moths in the world consisting of approximately three million specimens. These museums produce scientific research on systematization, faunistics, zoogeography of butterflies and moths, and popularization and information about environmental protection.



Great Britain cover from Entomological Society of London 1911

In order to promote and exchange scientific information, scientists hold entomological congresses from time to time. The first International Entomological Congress took place in 1910 in Brussels. Since 1956, such congresses are held once every four years.

The growth of cities, land development at the expense of forests and meadows, air pollution, and the use of insecticides all lead to the sharp decline of butterflies and moths. That is why many countries and communities have begun to create special zoological gardens—butterfly farms—for breeding of rare and exotic species, and also for studying these creatures. Nowadays such farms exist in Papua New Guinea, England, Germany, France, Japan, United States, Canada, and many other countries.

[to be continued]