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Entomological Notes Taken While in the Orient

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These observations were made while with the United States of America Typhus Commission during the period from November 1944 to November 1945 in the Orient. The unit base was situated near Myitkyina, Burma, which is located on the banks of the upper Irrawaddy River in north central Burma. Consequently most specimens are from that vicinity. The paper is given to acquaint others with the situations at hand and inform you of various existing conditions there.

Myitkyina, as one might expect from its geographical location, is subject to a great fluctation in its climate. The average mean monthly temperature from April through September was 80° or above. Temperatures were extremely hot during the afternoon, but cooled during the evening. December, January and February were the colder months during the year with an average monthly mean temperature of about 64°. The monsoon occurs during the hotter months and although the amount of moisture is not noticeably excessive, showers fall at rather regular intervals during the period. During June, July and August the average monthly rainfall is over 20 inches. The heavier rains fall during the six hottest months and the opposite extreme is reached during the following six months when the average monthly rainfall is slightly over half an inch. This gives a two seasonal cycle, with a hot wet monsoon season and the colder dry season.

This type of climate is definitely against the entomologist. Various species of molds seem to be in evidence during the entire period. These molds grow on specimens, in boxes, on books, shoes, clothes and seemingly on just about every thing, including you. Insect pins may be found to rust quickly during the rainly season and when put in a cardboard bottom become stuck there with rust and are difficult to remove. It therefore becomes somewhat essential for the entomologist to build a storage cabinet in which the temperature may be kept high and at a low humidity. Specimens should be dried out thoroughly in a hot cabinet, but after drying may be kept in a cooler storage cabinet.

With the aforesaid conditions in existence, with shortages of rust-resistant pins and time, transportation difficulties and all it was considered adviseable to put all specimens in folded paper containers or in pill boxes with cotton liners, leaving them unpinned for transportation to the United States. Specimens placed in these containers must be dried separately before placing them into a permanent storage container. Many of these specimens are yet in their containers awaiting pinning and study by any entomologist desiring such.

Collecting specimens was a bit of a problem. Sweeping or aerial nets were impractible in most places due to the subtropical jungle growth, which makes it difficult to follow specimens or to find an opening in which sweeping is practical. Some specimens can be taken by setting baited traps. An entomologist could do individual collecting to some limited extent, when he is acquainted with the food plant or

habitat of the species desired. Aquatics were not as abundant as one might expect. This might be associated with the ecological factor of extreme heat and drought than an excessive amount of rainfall. There was a very noticeable lack of plant debris or leaves upon the surface soil, this not allowing a place for insects to hide. Few species are found under bark of logs or stumps, however several species may be found under stones, boards or logs. With a few trinkets for use as gifts to the natives, the collector may get specimens he might never find, and then once the native knows just what you want he may bring many additional specimens. Perhaps the best single means of collecting in the Orient is by means of the light trap, or by other light devices whereby the insects are attracted to the collector. Many excellent specimens may be taken at the light in the tent or at the netting on the tent.

While many species have been collected this reporter is in no way or manner pertaining to be a specialist on any single group of Oriental insects. Many specimens remain unpinned and most species are as yet unnamed, however a list of the more representative orders follows with a few notes which may be of some interest to the reader.

Thysanura (The Bristletails) and **Collembola** (The Springtails)

Since specimens of these orders were hard to preserve only a very limited number of species were taken. Several species doubtless occur however.

Plecoptera (The Stoneflies)

These were taken in some numbers in the light trap and several distinct species were collected. Their size varies greatly.

Ephemeroptera (The Mayflies)

It seems somewhat surprising to note that the Order is somewhat restricted in numbers of species and individuals. Only a few species were taken and not the supposedly large numbers one might expect from such an aquatic habitat.

Odonata (The Dragonflies and Damselflies)

Many species of these were observed in some numbers towards the end of the Monsoon season, however in no greater numbers than they may be observed in Iowa.

Orthoptera (Grasshoppers, Crickets, Cockroaches, etc.)

As in America, here too, the beetles make up a vast majority of economic problem. The chief offender being one of the large crickets which was buried in the soil during the day but came out at night in great numbers to feed upon any garden stuff or crops that were in the offering. Grasshoppers, though present, seemed of little economic importance. Grouse locust and long horned grasshoppers occur in some numbers in the appropriate habitat. The world famed cockroach was present and ready to set up his abode with you at any or all times.

Isoptera (The Termites)

After the initial experience with these pests when a flight is on, one is smart to go into his tent, turn off the light and retire. They occur in such gross numbers it is nearly impossible to keep them out and it seems that when one finds a hole they all come following along

behind. They do quite a lot of damage in some areas to the bamboo native huts, making it necessary for them to rebuild them regularly. Most species seem much larger than our local fauna.

Dermaptera (The Earwings)

Several species are found, some attractively marked and showing a lot of variation in their forceps at the tip of the abdomen.

Coleoptera (The Beetles)

As in America, here too, the beetles make up a vast majority of the species encountered. They range in a great diversity of form, shape, size, color and all. While many species are not attracted to the light trap one can collect a good variety of species in this manner. Several species of Tiger Beetles were taken in this way. Scarabaeidae occur in many sizes, shapes and colors. Highly colored Cerambycids and Chrysomelids make collecting a real delight. The ever present ground beetles were found in large numbers as in the United States, however interestingly enough many of the smaller families of beetles found in the States occur in goodly numbers in the Orient.

Corrodentia (Psocids-Booklice-Barklice)

The winged form could be collected in the light traps occasionally, but were not numerous. Some were very attractive bearing long antennae and wings.

Mallophaga (The Biting Lice)

Many species of these were found on the birds of the region, this being particularly true of those which were closely associated to the soil. The Jungle Fowl, from which our domestic chickens supposedly were bred, showed heavy infestation in some instances.

Anoplura (The True Lice)

To be sure 'Kilroy was here' and so with these lice one could often find a native family of 4, 5 or 6 persons sitting in their clearing under a shade picking lice from each other's head. Some species are also found on the low animals. Rats were heavily infested.

Hemiptera (The True Bugs)

Many of the families were rather common. Several species of the genus *Triatoma* were observed and collected. Some of these may play an important role in Oriental disease transmission in man. Others likely pass plant disease within their areas. The Hemiptera of the area are highly marked and bear much color in their bodies. Doubtless many species will be recorded when a complete study is made.

Homoptera (Cicadas-Leafhoppers-Treehoppers, etc.)

To this order the Oriental Cicades play an interesting role. The large black, white and yellow species has a wing spread of about six inches. They produce a very shrill, high-pitched locomotive-like sound which ushers out the peace and quiet of the jungle as they emerge and start their shrilling call. These are seldom attracted to light and are very wary and difficult to collect. Another species of cicada has a wing spread of slightly more than one inch. Others range in between these two extremes and many species have highly decorative wing and body markings. Some very large and gaudy Fulgorids are

also found as are also many Cicadellidae. To be sure the ever present aphids are found in large numbers.

Neuroptera (The Nerve-Winged Insects)

Several families are represented in which much variety of color and shape occur. Perhaps the Mantispids are the most interesting and diverse of them. Some few Ascalaphids are found, too.

Trichoptera (The Caddisflies)

Many species are found and again much variation in color, size and number of individuals is demonstrated. Sometimes they occur in such quantities as to fill the light trap container and make it difficult to sort out the more desirable specimens.

Lepidoptera (Butterflies and Moths)

A few highly decorative species are found, however not many. Butterflies are not abundant and when one does spot a rather desirable looking specimen he is high above the collector's head and well out of reach. A few tiny species were rather well marked and attractive. There were large numbers of species of moths attracted to the light trap. Many of these were collected and returned to the United States for further study.

Diptera (The Flies)

In this group and of primary importance were the mosquitoes and houseflies, which are found throughout the year. In the immediate vicinity of Myitkyina the Army Malaria Control and Survey Units were able to keep the mosquito population well under control even to the extent that it was quite possible to have movies out of doors and this was common practice. None of the officers or men in our unit contacted any mosquito borne disease. Men were constantly protected by army repellant and bed nets were used at night. The most numerous mosquito belonged to the genus *Aedes,* likely because it bred in treeholes and cans and was not properly controlled by the malarial unit. The house fly was numerous in spite of our efforts with DDT and other control efforts. Hippoboscids and Nycteribiids were numerous on certain birds, dogs, and bats. Some very picturesque Otitids and Trupaneids were observed and collected. Many other flies were taken.

Siphonaptera (The Fleas)

Nearly, if not a complete absence of them in the Myitkyina area even though a rather extensive canvass was made.

Hymenoptera (The Ants, Bees and Wasps)

The Ants were very abundant and apparently many species were present. Small animals (rats and mice), when caught during the early evening might be badly eaten before removal from the trap in the early morning. Many species would also bite man readily and they would cause a stinging nettle-like sensation. In other instances they were just kitchen pests. The number of species of wasps and bees will likely run rather high when they are all mounted and named.

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