front end, 3 cm. high on the rear end) through an opening (9 cm. high, 9 cm. wide) on the removable front part of the cage. Each of these conical cages (Fig. 1) consists of a 20-mesh metal screen, a metal platform and a movable metal tray which can be lifted upwards to force the back of the rat against the screen. A door, having slits close to each other along its longitudinal axis, closes the opening, one of the slits on the door being hinged into a pin situated just above the opening to hold the rat against the screen. This method of offering a blood meal is an adaptation of the method used in the laboratories of the C.D.C., Savannah, Ga., and has also recently been described by Pollard (1960).

If eggs are to be collected a cup (9.5 cm. high; 7.2 cm. upper diameter) containing water or, in the case of *Aedes* species, lined with filter paper, is introduced into a metal box (15.0 x 10.5 x 13 cm.) with a plastic top. The box, the front part of which is open, is situated on the lower left hand corner of the cage, below the fixed front part. This box (Detail B) has a false bottom on springs which can be lowered when the cup is introduced. The upper side of the box has a circular opening 7 cm. in diameter, into the rims of which the mouth of the cup is fitted, and tightened by means of the bottom springs. A slide (49 x 10.5 cm.), having a similar circular opening, can slide along the top of the box, thus closing and opening the mouth of the cup. Ordinarily, the slide is so placed that the mouth of the cup is open towards the cage to enable the mosquitoes to lay eggs. When eggs are to be taken out, the mouth of the cup is closed by moving the slide. The cup is then pulled out by sliding it along the box until it reaches a circular cover, 9 cm. in diameter, with a wide rim, 1 cm. high, on its front side, which was placed previously in an appropriate slit in a prolongation of the slide. The cup, thus covered, is removed and placed in a refrigerator for a few minutes in order to inactivate any mosquito which may have reached the cup. These mosquitoes are killed and removed. Another cup is then introduced into the box by the same method.

In order to remove mosquitoes from the cage for experimental purposes, a circular opening (4 cm. in diameter) with a rubber rim (0.5 cm. wide) is located on the upper fixed part of the front cage (Detail C). By pressing and turning the handle, which is fitted with a coil spring and connected to a circular inside door, the opening can be closed and opened. A cavity 2 cm. deep connects the door and the outer opening. An aspirator which fits the entrance of the opening, and which is made mobile by the rubber rim, is introduced into the cavity. The door is then opened, and the aspirator is pushed inside. After mosquitoes are sucked in, the aspirator is pulled back until its end is close to the rim of the opening. The door is then closed, and the aspirator can be removed.

The cage described here has been used successfully in our laboratory as a continuous source of eggs and mosquitoes of several species and strains, without fear of contamination.

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TWO NEW RECORDS OF MOSQUITO SPECIES FOR MINNESOTA

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During the 1959 season two additional species of mosquitoes were added to the list of 47 species already recorded in Minnesota (Barr, 1958). The two new records were *Psorophora (Janthinsoma) ferox* (Humboldt) and *Psorophora (Grabhamia) confinnis* (Lynch Arribálzaga).

Three collections of *Psorophora ferox* larvae were made: Anoka County, Blaine twp., Sec. 3, B.S.I., IX–1–59; Hennepin County, Bloomington (T116–R21), Sec. 21, B.S. 11, IX–4–59; Hennepin County, Bloomington (T27–R24), Sec. 23, B.S. 10, IX–3–59. The larvae were identified, and some were reared for more positive identification. Identified specimens are now in the University of Minnesota collections. Prior to this time, *P. ferox* has been erroneously reported from light trap specimens taken by Riley and Chalgren in 1938. On subsequent examination these specimens were determined to be *Psorophora horrida.*

Only one collection of *Psorophora confinnis* was made (Washington County, Woodbury twp., Sec. 4, B.S. 3, VIII–29–59). This was a fourth instar larva and is now in the University of Minnesota collections.

The occurrence of *Psorophora horrida* in this state was confirmed by three biting collections: Anoka County, Columbus twp., Carlos Avery Game Farm, VIII–18–59; Scott County, Sand Creek twp., Sec. 19, park, VI–18–59; Scott County, Glendale twp., Sec. 31, B.S. 3, VI–19–59.

In addition to these records for *Psorophora,* the

first larval collections of *Culex (Melanoconion) erraticus* were made in Hennepin County (Hennepin County, Golden Valley (T29–R24), Sec. 18, B.S. 9, IX–11–59: IX–9–59). Adult specimens of this species were taken in light traps at Wabasha in 1939 by Peters and Daggy and again in 1941 by Peters. These are the only previous records for the state.

This is a large mosquito control district (approx. 2850 sq. mi.) embracing six counties and, thereby, providing a very wide range and variety of habitats. As a result, from our combined larval, light trap, and biting collections we have, to date, obtained 38 of the 49 species known for this state.

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TWO ADDITIONAL CHARACTERS IDENTIFYING *Culex tarsalis* COQ.

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Within the genus *Culex* there is frequently confusion in separating the two closely related species *C. tarsalis* Coq. and *C. peus* (Speiser), especially when the specimens for identification are worn, mutilated, or covered with moth scales and dirt, as is usually the case when they are caught in light traps.

For differentiating these two species almost all systematic books and manuals utilize two conventional characters which are undoubtedly reliable. They are: (1) presence of white scales in a narrow line or in a row of spots on the outer surface of femora and tibiae (*C. peus* lacks these), and (2) presence of a dark inverted V on the venter of most abdominal segments (*C. peus* has rounded spots instead).

These characters have proved sufficient if the specimens for identification are in good condition, but in the case of mosquitoes obtained from light traps the separation sometimes is difficult and the decision must rest on guesswork, or in regard to males on examination of the genitalia, a time-consuming process.

The authors have utilized two additional characters which serve to differentiate the species in doubtful cases. These are: (1) white scales on the base of the costal vein of the wing, and (2) two prominent tufts of white scales on the inner margins of the antennal tori. Both of these characters are present in *C. tarsalis* whereas they are lacking in *C. peus;* however the bushy development of the antennae in the males makes the antennal character inconspicuous.

Hundreds of specimens of both species from various parts of the state of California have been checked, and without exception have been found to conform with our findings. It should be said that these additional characters are not newly discovered. They are mentioned in the description of *C. tarsalis* (Howard, Dyar and Knab, 1915, v. 3, p. 232) but they have never been stressed for practical purposes.

A RECORD OF *Anopheles filipinae* IN NEPAL

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During 1959 the Nepal Malaria Eradication Organization sent survey teams into different parts of Nepal to collect pre-eradication epidemiological data. On December 17 in the village of Dharampani Kaymen in a remote hilly region of District West Number 3 (Fig. 1), S. P. Pradhan found that he had collected one adult female specimen of *Anopheles filipinae* in an early morning collection.

Dr. D. K. Viswanathan and Dr. D. R. Mehta of the World Health Organization, New Delhi, India further confirmed the identification of the species.

As far as can be determined, *A. filipinae* has not been previously reported from either Nepal or from India, which is closely related both geographically and climatologically to Nepal.

Manalang (1930) reported that adult *A. filipinae* had been collected and described from Bulucan, Philippine Islands. He further stated that the larval form of the species was found in impounded spring water, shaded or unshaded, clear or muddy streams, rivers, flowing irrigation ditches, pools and lakes in the locality of Ungkong Managa near Bulutong stream (Boyd, 1949). The larvae are also occasionally found in association with aquatic vegetation such as *Pistia, Ipomoea,* and water hyacinths. Very little is known about the habitats of adult *A. filipinae* (Foote, *et al.,* 1959). However, D. E. Eyles (1944) has reported that experimental flight range tests have been performed upon the species and that specimens have been observed to travel as far as 3,300 feet from the point of release.

The village of Dharampani Kaymen, from which the species was collected in Nepal, lies at

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