Sacramento Valley and that *A. freeborni* adults synthesize lipids earlier than *C. tarsalis* (Schaefer and Washino, 1969, 1970). The synthesis of triglycerides by adults is apparently a general phenomenon in mosquitoes, which is under neurosecretory control (Lea and Van Handel, 1970; Van Handel and Lea, 1970).

Since blood feeding by adult *A. freeborni* and *C. tarsalis* is minimal during the fall and winter (Washino, 1970; Bellamy and Reeves, 1963), the source and composition of food which adult females utilize for the synthesis of overwintering energy stores (triglycerides) is of considerable interest and is presently under investigation.

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PRELIMINARY REPORT ON ARBOVIRUS ISOLATIONS FROM SOUTH DAKOTA MOSQUITOES COLLECTED DURING THE SUMMER OF 1969[1]

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There has been no epidemiologic study in South Dakota involving arbovirus isolation attempts from mosquitoes. The mosquitoes of South Dakota were first studied intensively by the United States Public Health Service in 1949 and 1950 (mimeo reports, 1951, 1952); virus isolations were not attempted from mosquitoes collected, but population indices were determined. This study was mainly conducted in the James and Missouri River Basins. A more recent mosquito survey in South Dakota was conducted by Gerhardt in 1964 (Gerhardt, 1966). The first arbovirus antibody surveys in South Dakota were conducted by Eckland in 1941 (personal communication). More recently, 1961, Hess *et al.* (1963) found antibodies to St. Louis

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encephalitis virus in sentinel chicken flocks maintained in central South Dakota. In 1967, eastern equine encephalitis virus was isolated from commercially reared pheasants raised near Canton, South Dakota (Parikh, Colburn and Larson, 1967).

This report summarizes the data on mosquitoes collected and processed for virus isolation in 1969. The mosquitoes were collected on 40 trap nights during the period July 20 to September 9, 1969 in Brookings County located in eastern South Dakota. These mosquitoes were collected at three different trap sites. Site 1, a farmstead, was located directly on the banks of the Sioux River on very low lying, poorly drained land. A very diversified animal and bird population was present. Site 2, a horse ranch, was located on very flat land with many sloughs surrounding the farm. The only domestic animals present at this site were horses. The third site, a dairy farm, was located very near a residential district. The land surrounding the farm was heavily cultivated.

Approximately 42,000 mosquitoes were caught at these sites and 22,000 of these were identified and processed for virus isolation. The largest single trap catch was 12,000 mosquitoes at the horse farm on August 7. *Aedes vexans* comprised the majority of this large catch; however, only a small number were identified since only one virus isolation was made from *Aedes vexans*. Over 90 percent of the mosquitoes identified were of three species: *Aedes trivittatus, Aedes vexans,* and *Culex tarsalis*. The dairy farm had the highest population of *C. tarsalis* throughout the summer. (Table 1). The horse ranch and farmstead were the highest in *A. trivittatus* and *A. vexans*. Viruses were isolated from mosquitoes from two of these sites, the horse ranch and the dairy farm. No viruses were obtained from mosquitoes from the third site, a farmstead.

Viruses were obtained from 14 of the total of 320 mosquito pools tested. These comprised 8 western equine encephalitis (WEE), 1 Turlock (TUR), and 1 Cache Valley-like (CV) virus from *C. tarsalis;* 2 California encephalitis (CEV) group viruses and 1 CV virus from *A. trivittatus;* and 1 CV virus from *A. vexans* (Table 2). All but one of the *C. tarsalis* isolates and the single *A. vexans* isolate were from the dairy farm where over 60% of the mosquitoes collected were *C. tarsalis*. The infection rate in *C. tarsalis* reached 7.39/1000 mosquitoes during the third week in August (Table 2). The other identified isolates were obtained from the horse ranch site; there were isolations of CV and 2 CEV viruses from *A. trivittatus* and one WEE virus from *C. tarsalis*. Approximately 50% of the mosquitoes from this site were *A. trivittatus*. The third

TABLE 1.

Numbers of major mosquito species processed for virus isolation, by week and site of collection Brookings County, South Dakota, 1969

	Culex tarsalis			*Aedes trivittatus*			*Aedes vexans*		
Week of	Farmstead	Horse Ranch	Dairy Farm	Farmstead	Horse Ranch	Dairy Farm	Farmstead	Horse Ranch	Dairy Farm
7–27 to 8–2	——*	67	1013	——	347	154	——	430	513
8–3 to 8–9	546	321	251	2480	705	234	571	1030	164
8–10 to 8–16	523	263	657	1076	1835	48	701	474	83
8–17 to 8–23	1379	444	832	56	729	27	205	606	444
8–24 to 8–30		11	——	——	209	——	——	138	——
8–31 to 9–5	——	——	458	——	——	58	——	——	168
TOTAL	2248	1106	3211	3621	3825	521	1477	2678	1412

* Mosquito traps were set at these sites during these weeks, but few, if any, mosquitoes were caught; this was due to bad weather, no mosquitoes, or trap failure.

TABLE 2.

Virus isolations by date and site of collection with weekly infection rates
Brookings County, South Dakota, 1969

Date by Week	Site	Virus—No. of Isolates	Mosquito Species	Infection Rate (per 1000 mosq.)
7–27	Dairy farm	WEE-1	*C. tarsalis*	1.03*
to	Dairy farm	CV[a]-1	*A. vexans*	2.87
8–2	Horse ranch	CEV[b]-2	*A. trivittatus*	10.73
8–3 to	Dairy farm	None	*C. tarsalis*	——
8–9	Horse ranch	None	*A. trivittatus*	——
8–10	Dairy farm	WEE-2	*C. tarsalis*	3.39*
to	Dairy farm	CV[a]-1	*C. tarsalis*	1.03
8–16	Horse ranch	WEE-1	*C. tarsalis*	4.45
	Horse ranch	CV[a]-1	*A. trivittatus*	0.73
8–17	Dairy farm	WEE-4	*C. tarsalis*	7.39*
to	Dairy farm	Turlock-1	*C. tarsalis*	1.03
8–23	Horse ranch	None	——	——

* This shows an increased infection rate of *C. tarsalis* with WEE at the dairy farm.
a=Cache Valley-like virus
b=California encephalitis group virus

study site, from which no isolation of virus was made, had nearly comparable numbers of mosquitoes tested for virus.

The arbovirus isolations herein described are the first to be reported from the state of South Dakota.

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