

CURRENT KNOWLEDGE OF EASTERN ENCEPHALITIS IN MARYLAND¹

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Maryland was one of the eastern states in which the severe epizootic of eastern equine encephalomyelitis occurred in 1933. Some of the first work in isolating the virus from the brains of fatal horse cases and in diagnosing the disease was reported by Brueckner *et al.* (1934). According to U. S. Department of Agriculture annual reports there were 98 equine cases reported in 1938, 70 in 1939, 180 in 1945, 42 in 1955, and 33 in 1956. Smaller numbers of cases occurred in intervening years. In 1959 practicing veterinarians reported 17 cases, and 7 of these were confirmed through laboratory studies conducted under the supervision of the second author. Watson (1959) pointed out that the attack rate in 1959 was actually higher than it was twenty years ago because of the very marked decline in the horse population.

A serological survey for neutralizing antibodies in horses and ponies on the Maryland and Virginia Eastern Shore in 1956 and 1957 showed that 16 of 89 horses tested had significant EEE neutralizing antibodies (Byrne *et al.*, 1959).

The first documented human cases occurred in Maryland in 1956. In that year there were two laboratory-confirmed human cases. There was one confirmed human case in 1959.

In the foregoing paragraphs positive evidence is cited that the virus of the disease now termed eastern encephalitis is present in Maryland, and it may well be concluded that viral activity is not diminishing. Additional information about viral activity has been provided by Moulthrop (1959) who recognized an outbreak of the disease in Chukur partridges near Salisbury. The virus was identified by the second author

and a detailed report of this work will be published elsewhere.

Another significant development has been the isolation of the virus from pooled spleens of healthy English sparrows from Laurel, Maryland. Dead birds had previously been noticed in the same area, but the actual cause of death was not ascertained.

Byrne *et al.* (1959) reported on mosquito collections and virus isolation attempts made in 1957 and 1958. In 1957 there were 21 pools of *Aedes sollicitans* (Walker), and in 1958 very limited numbers of tests were run on *A. sollicitans* and six other species. No viruses were isolated. A small number of mosquito pools was tested in 1959.

Newson (1959) reported on a study of the feeding habits of mosquitoes in eight localities on the Eastern Shore where eastern encephalitis had occurred. Precipitin tests were made using specific antisera for horse, cow, pig, human, and avian blood to determine the source of blood meals. The 1,547 mosquitoes tested included 14 species. His results showed that five species, *Aedes sollicitans*, *A. taeniorhynchus* (Wied.), *A. vexans* (Meigen), *Psorophora ciliata* (Fabr.), and *P. confinnis* (L.-Arr.) might be considered important potential vectors. The range of hosts and potential vector importance of five species could not be determined because too few specimens were collected. A single specimen of *Culiseta melanura* (Coq.) was collected in close association with a confirmed case of encephalitis and was found to have fed on avian blood.

Culiseta melanura is considered to be a rare species throughout the state, and very little is known about actual breeding sites. Light trap records for 1959 showed small numbers at ten Eastern Shore towns.

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The role of this species in the enzootic transmission cycle in Maryland is unknown. It seems hardly possible that it is sufficiently abundant to be of major importance in the bird-to-bird cycle. More information about the over-all abundance and the seasonal and geographical distribution of this species is desirable. The same is true of *A. atlanticus* D. & K., another sylvan species which is widely distributed. Populations of this species never seem to be large. Although it is essentially diurnal in habits it was collected in light traps at 13 localities in 1959. It was most active during the last week of July.

In 1959 unusual rains and tides in the Chesapeake Bay area contributed to extremely heavy populations of salt-marsh mosquitoes and fresh water species such as *Psorophora confinnis* which are associated with temporary rain pools. This was true in 1933 and in most other years when eastern encephalitis outbreaks have occurred.

In conclusion, mention should be made of the work of John E. Scanlon. Currently

in progress are studies (undertaken with support from the U. S. Army Medical Research and Development Command) which deal with the vector potentialities of 2 species of *Culicoides* (Diptera: Ceratopogonidae). Tentative conclusions are that these biting midges are not involved in the transmission of EE virus in Maryland.

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