SPECIAL REPORT

on

SYMPOSIUM ON ARTHROPOD-BORNE VIRUS AND RICKETTSIAL DISEASES

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by

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Commission on Viral Infections

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Divisions of Preventive Medicine of the Armed Forces
President, AFEB
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This two-day symposium on arthropod-borne viral and rickettsial diseases dealt mainly with new findings in the field of the encephalitides, dengue and several new febrile viral diseases occurring in the countries bordering on the Pacific Ocean. These ranged from California to Japan and south to India and Australia.

From California were reports from Dr. Harald N. Johnson of the Rockefeller Foundation, Berkeley, California, on a virus isolated from bats, called the Rio Bravo virus. This belongs to the group B arthropod-borne viral agents and is found in the saliva, urine and lactating breasts of bats, but the actual method of transmission has not been determined. The only human cases recognized have been laboratory infections.

Dr. W. C. Reeves and associates from the University of California in Berkeley presented new findings and their possible interpretation regarding the overwintering mechanism of western equine and St. Louis encephalitis viruses in California. A small proportion of western-equine-inoculated wild birds were found to retain the virus, occasionally presenting it in the blood, many months after injection. They suggest that this is more likely to be the true reservoir than overwintering mosquitoes or newly infected migrating birds from the south.

Dr. S. G. Anderson of the Walter and Eliza Hall Institute of Medical Research in Melbourne, Australia, presented recent data on Murray Valley encephalitis in his country and in Papua-New Guinea. Outbreaks are sporadic and appear to depend on several unpredictable factors, including rainfall. Virus is believed to persist in the tropical regions, but must be reintroduced into southern Australia, possibly by migrating birds.

Japanese B encephalitis studies were reported from Japan, Malaya, Singapore and India. Drs. J. H. Hale and K. A. Lim of the University of Malaya, Singapore diagnosed sporadic cases in Singapore in young native children and adult British soldiers. They concluded that infection was probably much more prevalent during the Japanese occupation than now. Infected Culex tritaeniorhynchus have been found and evidence was obtained that inoculated pigs could serve as sources of mosquito infection. Major E. L. Buescher of the Walter Reed Army Institute of Research discussed certain differences between the epidemiology of tropical and temperate climate Japanese encephalitis comparing Japan and Malaya. He emphasized the evidence for birds and possibly pigs as sources of infection for mosquitoes in Japan. Drs. C. G. Pandit and T. N. Work from the Indian Council of Medical Research and the Virus Research Center, New Delhi and Poona, respectively, reported on the proved presence of Japanese B virus in that country.

Studies from Luzon in the Philippine Islands were presented in two papers by Dr. W. McD. Hammon and his colleagues from the Graduate School of Public Health, University of Pittsburgh; the School of Hygiene, University of the Philippines, and the Philippine Department of Health. A serologic study of three native population groups with 15 of the arthropod-borne viruses suggested the probable presence of Japanese B, dengue types 1 and 2 and at least 2 other group B agents, and from group A, eastern equine and a virus closely related to Semliki Forest virus. In studies made on Philippine hemorrhagic fever, a highly fatal, relatively new disease of children in the Manila area, the cause was learned to be a dengue-like virus related antigenically with both dengue type 1 and 2. Virus isolates were
made from patients with the classical disease and others with mild febrile illnesses without hemorrhage, also from Aedes aegypti mosquitoes. This is the first reported isolation of dengue virus from wild-caught mosquitoes. Illnesses were also confirmed as dengue by serologic tests. Control measures can now be applied.

The limiting temperature for the transmission of dengue virus in Australia was reported by Drs. E. H. Derrick and V. A. Dicks of the Queensland Institute of Medical Research, Brisbane, Australia.

Two papers dealt with the interesting topic of the response to yellow fever vaccine by persons previously infected with Japanese B Virus or a combination of viruses belonging to group B, the antigenic group to which yellow fever also belongs. Compared with persons in Ireland or Baltimore who had had no previous group B infection, the others showed less in the way of viremia and antibody response after being given 17-D virus. With those having previous group B experience, YF virus stimulated antibodies to certain other group B agents, including dengue. These papers were given by Drs. C. E. Gordon Smith and L. H. Turner of the Institute for Medical Research, Kuala Lumpur, Malaya and Drs. C. L. Wiseman and colleagues of the University of Maryland School of Medicine, Baltimore and the National Institute of Health, Tokyo.

Dr. C. E. Gordon Smith of Kuala Lumpur also reported on the incidence and distribution of infections with a number of arthropod-borne viruses found in Malaya. Japanese encephalitis, dengue type 1, and probably type 2, a member of the Russian spring-summer complex and a D-2 virus, all from group B, are recognized, also viruses from group A. Emphasis was placed on the difficulties of interpreting serologic findings where many viruses with related antigens are found. The Russian spring-summer-like virus was recovered from a common forest tick, *Ixodes granulatus*, and it appears to involve rats.

Dr. W. L. Pond and colleagues from the U. S. Army Medical Research Unit, Kuala Lumpur, Malaya, and Walter Reed Army Institute of Research and the Institute Pasteur and Red Cross Hospital, Bangkok, reported on the complex serologic findings found among residents of Thailand, Malaya and Indochina. Five of the arthropod-borne viruses were used in the tests. High percentages in all countries neutralized Japanese B encephalitis and Ntaya viruses. In Malaya antibodies were also present to Zika and Ilheus. In Bangkok 64% had antibodies to Semliki Forest virus. Again the difficulty of interpretation of test results in groups of viruses with common antigens was emphasized.

Two other papers on Malayan fevers and viruses were given by Dr. B. L. Elisberg and colleagues from the U. S. Army Medical Research Unit, Kuala Lumpur, and the WRAIR, Washington, D. C. The first dealt with pyrexias of unknown origin in children. Four distinct viral agents were isolated. The second paper dealt with agents isolated from mosquitoes: 34 viruses representing 9 types. One of these is Japanese encephalitis virus. Dr. Buescher noted that one virus from Malaya was Sindbis. Identification of the others is being worked out.

Drs. H. E. Webb of the Royal Army Medical Corps and B. L. Elisberg of the U. S. Army Medical Research Unit, Kuala Lumpur, reported on cases of encephalitis in Singapore, placing emphasis on those not due to Japanese encephalitis virus. Several agents not yet identified, but not JBE virus, have been isolated from fatal cases.
Three papers on Kyasanur Forest disease of India were presented by Drs. T.H. Work, H. Trapido, M. G. Raja Varma and P. K. Rajagopalan of the Virus Research Center, Poona. This is a new disease that just appeared in the forest area of Mysore State. It is a human, enteric-like disease with hemorrhages, associated with many deaths. It also produces a fatal disease in large numbers of forest monkeys, thus simulating yellow fever in the New World. Viruses have been isolated from man, monkeys and Haemaphysalis ticks. This agent belongs to the Russian spring-summer-louping-ill complex. Antibodies have been found in a few rodents. Isolations of virus have been from the immature stages and these stages also were those found on infected hosts. Much concern was expressed about the apparent rapid spread of this agent from the area in which its effects were first noticed.

A paper by Drs. Takeo Tamiya and associates from the National Institute of Health in Tokyo dealt with scrub typhus in Japan. This disease has been found in many areas not previously known to be infected.

Capt. R. A. Phillips, U. S. N. (M.C.) told of the newly established Navy Medical Research Laboratory at Taipei, Taiwan, its purposes, staff, equipment and facilities.
ADDENDUM:

Since this report was written a brief article of this type was requested through Dr. Karl F. Meyer, Secretary of the Public Health and Medical Section of the Pacific Science Congress, by Mr. Walter Kahoe, Executive Editor of MEDICAL SCIENCE magazine. It has been accepted for publication and should appear in the February 10, 1958 issue of MEDICAL SCIENCE.