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FSTC-HT-23-1547-71

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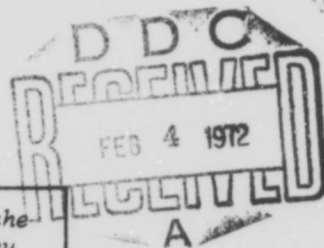
VIROLOGICAL RESEARCH IN THE FAR EAST

by

G. P. Somov, V. G. Reyfman and I. E. Trop

COUNTRY: USSR

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Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Foreign Science and Technology Center US Army Materiel Command Department of the Army		2a. REPORT SECURITY CLASSIFICATION Unclassified	
		2b. GROUP	
3. REPORT TITLE Virological Research in the Far East			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Translation			
5. AUTHOR(S) (First name, middle initial, last name) G. P. Somov, V. G. Reyfman, and I. E. Trop			
6. REPORT DATE		7a. TOTAL NO. OF PAGES 5	7b. NO. OF REFS N/A
8a. CONTRACT OR GRANT NO.		8c. ORIGINATOR'S REPORT NUMBER(S) FSTC-HT-23- 1547-71	
b. PROJECT NO. c. T702301 2301		8b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d. Requester			
10. DISTRIBUTION STATEMENT Approved for public release; distribution unlimited.			
11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY US Army Foreign Science and Technology Center	
13. ABSTRACT The research of the first Far Eastern Scientific Conference of virologists at Vladivostok is summarized.			

DD FORM 1473 1 NOV 65

REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED Security Classification

14

KEY WORDS

LINK A

LINK B

LINK C

ROLE

WT

ROLE

WT

ROLE

WT

International Conference
Virology
Virus Disease
Epidemiology
Immunology

Country Code: UR
COSATI Subject Field: 05; 06

TECHNICAL TRANSLATION

FSTC-HT-23- HT-1547-71

ENGLISH TITLE: Virological Research in the Far East

FOREIGN TITLE: Virusologicheskiye Issledovaniya na Dal'nem Vostoke

AUTHOR: G. P. Somov, V. G. Reyfman, and I. E. Trop

SOURCE: Voprosy Virusologii, No. 2, 1971, pp 250-252, USSR

Translated for FSTC by Leo Kanner Associates, Redwood City, California

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The productive forces of the Far East have entered a new period of growth, a period of increasingly accelerating growth of the national economy, of science, and of culture, as stipulated by the requirements of creating a material-technological basis for Communism. To ensure the solution of this grandiose task requires a high degree of development of the sciences, which must precede the growth of the national economy so that it can be planned on a rational and perspective basis. At the same time, one must provide for the development of its more essential branches. In the medical, biological, and agricultural fields particular attention must be paid to the development of virology, which, at the present time, determines the progress of all the biological disciplines.

A conference devoted to the investigation of virological diseases of human beings, animals, and plants was convoked in Vladivostok at the end of August, 1969. The choice of the location for this complex conference was determined by the extraordinary spread of virological infections in the Far East. These infections are related to the unique climatic, geographic, and ecological peculiarities of this region. The basic tasks of this conference were to bring together virologists of different specialties, primarily in the fields of general virology, the evaluation and generalization of theoretical and practical achievements in the fields of medical and veterinary virology, as well as the virology of plants, and the exchange of actual experiences in the use of present-day methods of investigation in each of these branches.

The conference was organized by the Soil Biology Institute of the Far Eastern affiliate of the Siberian Department of the Academy of Sciences of the USSR, and the Vladivostok Scientific Research Institute for Epidemiology and Microbiology. This latter Institute belongs to the Ministry of Health of the RSFSR (Russian Soviet Federated Socialist Republic). Participating in this

conference were 276 specialists: virologists, plant pathologists, agronomists, and physicians and veterinarians of all the districts and regions of the Far East, as well as their colleagues from the scientific institutes of Moscow, Leningrad, Kiev, Sverdlovsk, Riga, Novosibirsk, Tashkent, and others (the Institute for Microbiology of the Academy of Sciences of the USSR, the D. I. Ivanovski Virological Institute of the Academy of Medical Sciences of the USSR, The Institute for Poliomyelitis and Viral Encephalitis of the Academy of Medical Sciences of the USSR, the All-Union Institute for Plant Pathology, Moscow University, the All-Union Institute for Protection of Plants, the Institute of General Genetics of the Academy of Sciences of the USSR, the Institute of Microbiology and Virology of the Academy of Sciences of the Ukrainian SSR, and others).

The conference featured 104 papers, presented by local investigators and specialists of the central institutes. Overall, there were four plenary sessions and ten sessions of the three sections: medical and veterinary virology, viral diseases of plants, and methodology.

G. P. Somov and I. B. Trop presented summaries of the investigations of viral diseases of people in the Far East. They recalled the roles played by the task forces of the Academy of Sciences and the National Commissariat of Health of the USSR, from 1937 to 1939, in the establishment of Soviet virology and in laying the foundations for the study of the natural source of diseases. At the suggestion of Prof. M. P. Chumakov, the conferees paid tribute to the memory of the scientists and laboratory technicians who lost their lives in the study of tick encephalitis and other viral diseases of the Far East.

During the plenary sessions particular interest was generated by the presentation of Prof. M. P. Chumakov ("Progress in the investigation of viral hemorrhagic fevers"), Prof. L. N. Levkovich ("Perspectives in the investigation of arbor viruses¹ in the Far East; genetics and evolution of arbor viruses"), Prof. M. K. Voroshilova ("Live enterovirus vaccines--interferon indicators, that produce promising results in the fight against grippe and adeno- and enterovirus infections"), Prof. D. K. Lvov ("Prognosis of the spreading of arbor viruses in the Far East"), Prof. M. I. Sokolova ("The laws of interaction of viruses with cells"), Yu. I. Vlasov ("Specialization of plant-pathogenic viruses"), D. V. Lipsits ("The mechanism of the resistance of plants towards viruses"), A. N. Kolosov ("The interaction of the genetic apparatus of cells of higher organisms with their viruses").

¹ Arthropod-borne viruses, i.e. carried by insects, ticks, etc.

The majority of the papers dealing with medical virology were devoted to the study of Japanese and tick encephalitis (JE and TE), hemorrhagic fevers with kidney complications, enterovirus infections, grippe and acute respiratory illnesses, and tsutsugamushi fever.

V. V. Pogodina reported on the results of the complex investigations of the Institute for Poliomyelitis and Viral Encephalitis of the Academy of Medical Sciences of the USSR, the Vladivostok Institute of Epidemiology and Microbiology, and the medical service of the DVO (Far East Region) who studied the effectiveness of vaccines against JE on the population of the Pacific region, and the utilization of the harmless M-mutant of the cause of this illness in the immunization of swine--an important source of this infection.

The Vladivostok virologists (I. N. Polenova, L. G. Tatarinova, et al.) reported on the probable circulation in the Pacific region (in addition to the viruses JE and TE) of the exotic Western Nile and Sindbis viruses, and the introduction of these viruses by migratory birds. Several presentations were devoted to the results of studies of determining the geographic distribution of tsutsugamushi fever in the Soviet Far East, and the discovery of the natural sources of this infection in Sakhalin and the Kurile Islands, as well as the determination of new carriers and reservoirs of infection (G. P. Somov and co-workers). T. B. Pysina and others reported on the presence of antibodies to the grippe virus of type A in the blood of wild migratory birds. R. A. Slonova and I. P. Gregoryan summarized the results of studies of enterovirus infections in the Pacific regions during 1960 to 1968.

Researchers from Khabarovsk (L. A. Vereta and others) told of their results of a preliminary epidemiological investigation of TE occurring in the district where the Zeisk Government Electrical Station was being built, of the new methods of investigating the sources of hemorrhagic fevers with kidney complications, and of the discovery of the complex structure of the TE virus. L. P. Khodko, V. M. Chipanina, et al. presented interesting data on the isolation of the TE virus from natural sources during wintertime. V. I. Resnik and I. G. Roslaya discussed the etiology of acute respiratory illnesses in Khabarovsk. E. P. Kogut discussed the isolation of a strain of the virus Coxsackie A-18 from children ill with myocarditis. M. Yu. Smirnova and others reported on the investigations of TE in Sakhalin.

Yu. V. Dandurov and O. S. Sakovich reported on the isolation, in the Pacific region, of strains of arbor viruses resembling the Sindbis and Bunyamwera viruses, but V. V. Pogodina and D. K. Lvov consider their identification insufficiently convincing.

There were few presentations concerned with veterinary virology, which indicates the very insufficient development of these investigations in the Far East. Great interest was aroused by the presentation by coworkers of the Far Eastern Veterinary Institute (Blagoveshchensk). L. P. Talpalatski presented new material and showed a film devoted to the investigation of the virus etiology of the 'summer death' of bees in the Pacific regions. V. N. Nikolaeva discussed the role of virus agents in the infectious atrophic rhinitis of swine.

Even though the investigation of virus diseases of plants began in the Far East only ten years ago, nevertheless, Far Eastern scientists presented more than 20 papers. V. G. Reyfman summarized the investigations of the virus diseases of plants in the Far East. Many-sided investigations of the viruses and the virus diseases of agricultural plants were carried out. For their diagnosis the most modern methods were used. It was found that insects are the carriers of viruses. The metabolism of proteins, carbohydrates, and nucleins in plants affected by viruses was studied. The harmfulness of several viruses was demonstrated by their effect of sharply decreasing harvests, and their effect on deteriorating the quality of production (lowering of the starch content of potatoes, and of protein and oil in the seed of the soya bean). A very interesting study by the investigators of the Soil Biology Institute was concerned with the use of tissue cultures to cure some valuable types of potatoes affected by viruses. This was accomplished by using nuclease enzymes to inhibit virus growth. This presents the possibility of creating a sterile zone for the growing of virus-free seed potatoes.

More than 30 papers were presented in the section on virus diseases of plants. These included papers on defective strains of the tobacco mosaic virus (O. S. Kapitsa), on insects as carriers of viruses (E. G. Lebedeva and K. P. Dyakonov), reports from the workers of the Soil Biology Institute on the effects of virus infection on the metabolism of a diseased plant (V. A. Andreeva, R. B. Martinova, V. D. Kostin, V. A. Pantyukhina, and A. V. Reunov), on the epidemiology and diagnosis of virus diseases in potatoes (A. V. Krilov), and on the phytoentomopathogenic mosaic virus of winter wheat (G. M. Razvyazkina), and others.

The papers in the closing session of the conference were devoted to methods of virological investigations: "The immunofluorescent (sic) detection of arbor viruses" (A. I. Lovova and S. Ya. Gaidamovich), "Principles of increasing the effectiveness of methods of culturing and titrating of viruses" (A. S. Novakhatski and F. I. Ershov), "The utilization of interference microcinematography for the investigation of virus infections" (V. D. Bistrov and O. N. Tsvetkova), "The separation of virus

components using column chromatography with a DEAE-sefadex (sic)" (L. V. Vereta and E. N. Levkovich), "Confirmation of the methods of electronic microscopy" (L. N. Trofimets and V. I. Stepanenko), "Utilization of the methods of tissue cultures and plant virology" (N. V. Ageeva, V. G. Reifman, and L. G. Gregetova), "Utilization of tissue culture in the study of insect viruses" (V. L. Miloserdova).

The participants of the Congress on Plant Pathology in London (A. E. Protsenko) and the Congress on Virology in Helsinki (M. I. Sokolov) told about the events at these important international forums. V. G. Reifman acquainted the participants at the conference with the status of the plant virus investigations in Japan.

All the presentations were preprinted in a book, entitled "Virological Investigations in the Far East".

In the resolution of the conference it is noted that, in recent years, the virological investigations in the Far East have developed significantly, and that highly qualified cadres are available. The resolution emphasized the great necessity for improving virological investigations, organization of new institutes, and enlarging existing laboratories. These have to be provided with the newest apparatus, and they must quickly publish the results already obtained, so that these results can be used immediately in practice, that is, in maintaining the health of farm animals and agricultural products. The conference also planned means of further development of virological research in the Far East.