DISCUSSIONS OF PAPERS ON VIRUS AND FUNGUS DISEASES

Chairman: THOMAS FRANCIS, JR. *Rapporteur:* ROBERT J. GOODLOW

DISCUSSION OF: "AIRBORNE Q FEVER," WILLIAM D. TIGERTT, A. S. BENENSON, AND W. S. GOCHENOUR

Dr. Langmuir cited some observations made on Q fever in the State of California in the late 1940's. Outbreaks in southern California were accompanied by a high incidence of pneumonia, whereas few pneumonia cases were seen in northern California outbreaks. He asked whether this was significant. Dr. Tigertt stated that the incidence of pneumonia reported in Q fever cases varied from none in some outbreaks to 100% in others. No particular significance could be attached to the percentage of pneumonia. The over-all reported incidence was approximately 50% in the outbreaks studied.

Dr. Wood referred to the large numbers of *Rickettsia burnetii* frequently found in certain animal placentas and inquired if the lungs were also a selective tissue for this organism. According to Dr. Tigertt, the lung and placenta are not necessarily to be considered selective sites for this organism, as the greatest concentration is found in the spleen. A titer similar to that of the placenta can be achieved in the embryonated egg and in tissue cultures.

The minimal number of organisms that can initiate Q fever is considered to be one. All the data can be explained on that concept. If the challenge dose of *R. burnetii* is high, the symptoms can still be aborted by adequate chemotherapy. However, even with a low challenge dose, chemotherapy that lasted only 5 to 7 days was followed by a relapse in all cases.

DISCUSSION OF: "PATHOGENESIS OF INFLUENZA," FRED M. DAVENPORT

Dr. Cluff remarked on the apparent discrepancy between the degree of host resistance to influenza and level of demonstrable serum antibody. The possibility that resistance to viral infection may be partly attributed to "cellular" mechanisms unrelated to serum antibody, as suggested by others, was mentioned, but it was indicated that there is nothing to substantiate this concept at present.

Dr. Davenport, in answer to questions, stated that at our present state of knowledge, pinocytosis, or any other special term could not be supported as describing the infectivity of this virus. He also preferred the word "movement" in place of "diapedesis" in describing the course of influenza virus within the tissue. The risk of pneumonia following aerosol challenge with this virus in man is not considered to be a significant risk.

DISCUSSION OF: "AIRBORNE HISTOPLASMOSIS," MICHAEL L. FURCOLOW

Dr. Langmuir recalled that not many years ago there was a divergence of opinion regarding the pathogenesis of histoplasmosis. Some believed in the hematogenous origin of the miliary lung lesions; others believed these lesions resulted from inhalation of spores. Everyone agrees today that histoplasmosis is an airborne disease. Dr. Furcolow answered several questions by stating that he had no information on the role of particle size in the natural transmission of the disease. In animals there was no difference in pathogenesis whether the organism was administered intranasally or intraperitoneally.

Certain outbreaks could be explained on the basis of immunological breakthrough following a high challenge dose. Also there was no evidence of contagiousness in histoplasmosis. The disease was evident in tuberculosis sanitoriums in the Rio Grande Valley; and as more interest is being taken in this condition, the finding of cases has been widespread. The incidence of cavitary cases has been almost exclusively in men past 50 years of age.

The role of dead spores and mycelial fragments in experimental aerosol challenge of animals may be important. They may be in aerosol particles as small as those that contain bacteria. The mycelial stage of the organism seems to be as pathogenic as the spores. Oral cavity ulcerations are considered as secondary to systemic disease and not a primary portal of entry.

DISCUSSION OF: "HUMAN COCCIDIOIDOMYCOSIS," CHARLES E. SMITH, DEMOSTHENES PAPPAGIANIS, HILLEL B. LEVINE, AND MARGARET SAITO

Dr. McDermott agreed that the route of systemic infection was lung to lymph node, then to various organs. The type of disease ensuing depends on the site or sites of invasion. Dr. Sulkin said there seemed to be a time relationship in some cases between bronchoscopy and the development of meningitis. Dr. Smith reiterated his belief that the pulmonary focal lesion in this infection nearly always is primary. In one instance meningitis has followed bronchoscopy by about 14 days and in two instances meningitis has developed shortly after excision of pulmonary lesions. The spores of *C. immitis* will survive at least 6 months in dust at temperatures between 20 and 30 C.