larger or cortisone treated dwarfs. HGH from embalmed bodies is clinically useful. HGH, 10 U., was not more beneficial than 2 U. The craniopharyngiomas in the OH did not grow during short-term treatment with HGH.

95 *A Longitudinal Study of Streptococcal Antibody Dynamics Showing Unusual Seasonal Fluctuations.* EDWARD L. KAPLAN, ELIA M. AYOUB, BASCOM F. ANTHONY, FRANKLIN W. BRIESE and LEWIS W. WANNAMAKER, Univ. of Minn. Med. Sch., Dept. of Ped., Minneapolis, Minn.

A population of 160 children (mean age = 6.6 years) was followed at 2-month intervals over a 2-year period with serial determinations for 3 streptococcal antibodies: antistreptolysin O (ASO), antideoxyribonuclease B (anti-DNAse B) and anti-nicotinamide-adenine-dinucleotidase (anti-NADase). Antibody dynamics of the more than 1,100 sera collected (mean no. bleedings/child = 7.3) were examined by comparing geometric mean titers (GMT) and significant rises at different times of the year. GMTs for all 3 antibodies increased during the summer and fall when streptococcal skin infections were common but leveled off or fell during the winter and spring despite a high prevalence of respiratory illnesses and positive throat cultures for group A streptococci (up to 70%). The smallest number of rises for all 3 antibodies occurred during the respiratory season. During the summer anti-DNAse B titers tended to rise more sharply and reached maximum levels sooner than the other two antibodies. Although GMTs were lowest in the 1–3-year age group, these children also showed marked rises during the summer and fall. Rises in ASO were less frequent than responses in the other two antibodies, especially after 3 years of age. Plateauing of GMTs occurred at a later age for anti-DNAse B than for the other two antibodies. This extraordinary, inverse seasonal pattern of antibody levels and responses emphasizes the predominant influence of skin infections in this population and raises the possibility of a curious immunological unresponsiveness to streptococcal respiratory infections during the winter month, behavior which may contribute to the low frequency of acute rheumatic fever relative to acute nephritis in this population.

96 *Measles in Previously Immunized Children.* STEPHEN J. LERMAN and ELI GOLD, Epidemic Intelligence Serv., Nat. Communicable Disease Center, Atlanta, Ga. and Dept. of Ped., Case Western Reserve Univ. Sch. of Med. at Cleveland Metropolitan General Hosp., Cleveland, Ohio.

An outbreak of measles (rubeola) occurred in a city in Northeast Ohio during January–June, 1969, involving 14 children previously immunized with live attenuated measles vaccine and 46 unimmunized children. In one school where the attack rate was 52.4% for unimmunized children, the attack rate for children immunized by one particular physician was 14.3% compared to 2.4% for children immunized by the local health department and other physicians. Vaccine in this physician's office was exposed to temperatures that may have contributed to virus inactivation.

This study is an example of vaccine efficacy under conditions of current community use that is less than anticipated by field trial experience. Lack of initial seroconversion is the most likely cause of these vaccine failures and deterioration of vaccine infectivity during storage is proposed as the probable explanation.

97 *Pathophysiology of* Mycoplasma pneumoniae *Infection in Human Fetal Tracheal Organ Culture.* ALBERT M. COLLIER and WALLACE A. CLYDE, Jr., Dept. of Ped., Univ. N.C. Sch. of Med., Chapel Hill, NC.

Mycoplasma pneumoniae-host cell interactions have been difficult to analyze: natural disease is limited to man, and low mortality provides little pathologic material. Data from experimental models suggest that the ciliated respiratory epithelium is the target cell of *M. pneumoniae*. Evaluation was made of fetal tracheal organ culture as a means of providing organized differentiated human epithelial cells for studies *in vitro*. Tracheas were removed from 15–20-week fetuses, obtained aseptically by hysterotomy for psychiatric indications; transverse sections were maintained in Hayflick's medium with Hepes buffer at 36 °C in 5% CO_2. The effects of *M. pneumoniae* were studied by observations of ciliary function, light microscopy and immunofluorescence. Ciliary motion (which could be quantitated stroboscopically) slowed, became disorganized and ceased by 96 h. Microscopic changes included epithelial cytoplasmic vacuolization and nuclear swelling, followed by loss of cilia. Immunofluorescence identified organisms among the cilia, between cells, and in surface microcolonies. No comparable changes were produced by 4 other human mycoplasma species which were tested. These findings suggest the pathophysiology of *M. pneumoniae* disease by revealing both functional and structural changes in parasitized human respiratory epithelium. The nature of this interaction may explain many general features of *M. pneumoniae* disease, particularly the frequency of tracheo-bronchitis with protracted paroxysmal cough which commonly occurs in childhood infections.

98 *Altered Growth Following Gestational Viral Infection of the Placental and Aplacental Host.* JOSEPH W. ST. GEME, Jr., CATHERINE W. C. DAVIS and LLOYD F. VAN PELT, UCLA Sch. of Med., Harbor Gen. Hosp., Dept. of Ped., Lab. for Microbiol. and Immunol. Research, Torrance, Calif.

Intravenous infection of 10 pregnant rhesus monkeys with mumps virus during the first trimester results in intrauterine and postnatal growth retardation. Virus may be recovered from the oropharynx of the pregnant monkey but has not been detected in the tissues of the embryo, fetus, or neonate. The maternal host develops mumps virus neutralizing antibody and delayed hypersensitivity while the infant monkey demonstrates delayed hypersensitivity alone.

Inoculation of the embryonated chick egg with mumps virus at 12 h of age results in a persistent gestational infection. At hatch virus may be recovered from the blood and organs contain virus in from 0.01 to 1.0% of their cells. Hatchling experimental and control chicks are of the same size. Within 1 week experimental chicks incur a transient growth lag which disappears by 4 weeks of age. Virus disappears from the tissues by 1 week of age. Specific antibody is present in the sera of experimental chicks at 1 month of age.

Preliminary studies reveal that parenteral mumps virus infection of the pregnant rat during early gestation results in fetal dwarfing. Virus has not been detected in late fetal tissues. Both maternal and weanling