Skeletal Age Changes in Puberty

A study by J.M.H. Buckler of Leeds, England, was conducted in 34 Leeds schoolboys, 10.1 to 11.4 years of age. Height measurements were taken every four months, and bone-age x-rays were obtained annually for four to five years. Growth velocity and skeletal velocity using the Tanner Whitehouse 2 (TW2) method to evaluate skeletal maturation were compared to ascertain if skeletal maturation progresses consistently year by year through adolescence. The data indicate that skeletal ages advance more rapidly than chronological ages during adolescence and that there is a direct relationship between skeletal velocity and growth velocity. Peak skeletal age velocity advances almost simultaneously with peak height velocity (13.7 ± 0.8 years *v* 14.3 ± 1.0 years).

The TW2 standards for bone ages, when established, were obtained using groups of children at various ages. These children were x-rayed once and, therefore, the standards do not take into account this rapid advancement of bone age at the time peak height velocity occurs.

In males who are growing rapidly, bone-age determinations that are done serially will advance at rapid rates. If this fact is not recognized, errors in interpretation may be made. Late developers will initially show a relative retardation of bone age, but their skeletal age will catch up when puberty ultimately occurs. In monitoring treatment, *physicians sometimes attribute the rapid changes in skeletal age* that occur at this time to incorrect treatment, when in fact these changes can be readily explained by the patient's stage of puberty.

Buckler JMH: *Arch Dis Child* 1984; 59:115.

Editor's comment—*We have all observed that, in certain patients, skeletal maturation occurs very rapidly and out of proportion to the chronological time that has passed. Dr. Buckler has supplied an explanation for at least some of these observations.*