$F_2^{proton} - F_2^{neutron}$, then:

$$\int_0^1 dx\, x^{n-2} N(x_1 q^2) \underset{q^2 \to -\infty}{\approx} \text{const.}\,(\ell n q^2)^{-a_n}\left(1+O\left(\frac{1}{\ell n q^2}\right)\right). \qquad 5.20$$

where:

$$A_n = \frac{3C_2(R)}{22C_2(G)-8T(R)}\left[1 - \frac{2}{n(n+1)} + 4\sum_{k=2}^{n}\frac{1}{k}\right]. \qquad 5.21$$

We note that the power of the log is independent of the physical coupling constant and is determined solely by the gauge group (G) and the fermion representation (R). For the three triplet SU(3) model: $A_2 = \frac{16}{81}$, $A_3 = \frac{25}{81}$ and for large n, $A_n \simeq \frac{8}{27}\ell n(n)$.

In a forthcoming publication we shall analyze lepton-hadron scattering in great detail, meanwhile a few comments are in order.

a. <u>The approach to asymptopia</u> in these theories is logarithmic. All asymptotic relations will be corrected up to terms of order $b_o^{-1}\left[\ell n\frac{q^2}{\mu^2}\right]^{-1}$. The rate of approach to asymptopia depends on the unknown low momentum behavior of the theory.

b. <u>Bjorken scaling</u> is violated by logarithmic terms, as in Equation 5.20. These logarithmic corrections are given by second order perturbation theory calculations, and depend only on the gauge group and the fermion representation. The only case where such logarithms are absent is when the relevant operator in the Wilson expansion has zero anomalous dimension. This is the case for vector and axial vector currents as well as the energy-momentum tensor. Thus the first moment of the iso-scalar component of the structure functions does scale: