SUGGESTED REFERENCES

J. C. SLATER AND N. H. FRANK, *Mechanics*. This somewhat elderly text still provides a prime reference for a readable, if at times elementary, discussion of the transition from discrete to continuous systems. In particular the path from the discrete chain to the continuous string is examined in Chapter VII with respect to transverse vibrations.

LORD RAYLEIGH, *The Theory of Sound*. This treatise naturally contains much material on the vibrations of continuous bodies. A discussion of the wave equation for the propagation of sound in gases will be found in Chapter XI, Volume 2, where the question of adiabatic versus isothermal motion of the gas is examined in great detail.

G. WENTZEL, *Introduction to the Quantum Theory of Fields*. Most monographs on the quantum theory of fields start with a discussion of classical fields and often provide the best references for the classical theory. Wentzel's book was one of the first. It is still worthy of reference because of the extent and lucidity of its treatment of the classical aspects. What the book has to say about the quantum formulation has long since been superseded however and is only of historical interest now. Minkowski space is used throughout.

A. O. BARUT, *Electrodynamics and Classical Theory of Fields and Particles*. Perhaps the best single reference to the classical formulation of fields, Barut's book packs a tremendous amount of information in relatively small compass – Lagrangians, field equations, stress-energy tensors, and conserved quantities for a variety of fields, etc. It attempts to give a covariant treatment of the Hamiltonian formulation, marked by considerable complexity. A number of oddities from the literature are collected here; e.g., spinor form of Maxwell's equations, which may be safely ignored at this introductory level. Noether's theorem is discussed, but not by name. (Parenthetically it may be noted that the treatment of Noether's theorem in Section 12-7 above was inspired in good part by an article by T. H. Boyer, *American Journal of Physics* 34, 475, June 1966.) It should be remembered that Barut uses the four-space with trace -2.

E. J. SALETAN AND A. H. CROMER, *Theoretical Mechanics*. Most recent texts on classical mechanics for physicists include a treatment of the classical theory of fields, and this is one of the best (their Chapter VIII). Four-space with trace -2 is used throughout so the formulas abound with metric tensors and raised or lowered indices (although the reasons for their particular version of the formalism are not always clear). Particularly noteworthy is the generalization of the momentum representation by a general expansion of the field in orthonormal functions.

J. D. JACKSON, *Classical Electrodynamics*. As has been mentioned, the second edition has converted from Minkowski space to one with trace -2. However the procedures for handling quantities in such a space are described in detail in Chapter 11 on special relativity. The classical field formalism is treated in Chapter 12, naturally with great emphasis on the electromagnetic field, which is discussed in all aspects. Especially noteworthy is a description of the Proca Lagrangian, which is a suggested form of the Lagrangian density for the electromagnetic field if the photon has a mass. The overall discussion is painstaking and distinguished by great clarity.