Hence, light has granular structure, it consists of particles that are commonly referred to as photons. It is interesting to note that the physical chemist G. N. Lewis in 1926 coined the word "photon" to describe something completely different from the Einstein light quantum. The word caught on but not Lewis's meaning. Over the last 20 years the development of the laser, the growth of improved crystals, and the fabrication of high-quality resonators for light gave birth to the field of quantum optics, a branch of physics that studies the interaction of quantized radiation with quantized matter.

Mandel and Wolf's treatise on the subject impresses by its volume and completeness. It contains more than a thousand pages and brings an up-to-date summary of many timely and thriving topics of quantum optics. Both authors are distinguished researchers in this field, and here they summarize their work and point of view. The book is unique in that it successfully brings together coherence theory and quantum theory of radiation, two fields that are usually treated separately. The book emerged from 30 years of teaching, and the authors have made it easy for the reader to follow the derivation of the results. Exposition of theory is always accompanied by experimental discussion. *Optical Coherence and Quantum Optics* is an ideal textbook to teach this field. The only "problem" is to choose from the vast reservoir of topics presented so clearly. Should one choose the authors' complete treatment of the quantum theory of the photo-electric detection of light, or the theory of the single-mode laser? Why not use their detailed expositions of the two-mode ring laser or the theory of the linear light amplifier, or maybe the chapter on squeezed states of light? These examples illustrate the book's exquisite menu. There are a few topics the treatment of which I found especially noteworthy.

Mandel and Wolf expertly cover elements of probability theory and random processes. Particularly likable is the section on mathematical techniques explaining the method of stationary phase. Second-order coherence theory of scalar and vector electromagnetic fields provides the background for applications in stellar interferometry and scattering from random media. The chapter on the quantization of the free electromagnetic field has a nice section on the timely topic of phase operators. In the chapter on quantum correlations and photon statistics Mandel and Wolf address the problem of localizing photons, usually not discussed in textbooks. Resonance fluorescence, treated in chapter 15, is particularly important in quantum optics since the measurement of photon anti-bunching and sub-Poissonian photon statistics in the mid-'70s by Mandel's group opened the field of quantum optics to the study of quantized field effects. Another enjoyable section is devoted to the parametric down-conversion and the quantum nondemolition measurement and provides deep insight into the principle of complementarity. This beautiful work hides under the rather neutral title "Some quantum effects in non-linear optics."

In conclusion, Mandel and Wolf's book is an impressive summary of the experimental and theoretical developments over the last 30 years. It will, without a doubt, become a standard textbook and reference for anybody working in quantum optics.

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