non's theory, the quantity of greatest interest is the mean amount of information per symbol in a representative collection of messages. This is $-\Sigma_i p_i \log p_i$, which again suggests a thermodynamic analogy and which was called by Shannon the *entropy* of the set of probabilities p_i.

One result of Shannon's paper was a revival of the discussion of Maxwell's demon, who now turns out to be an informed demon. But the reader interested in this topic will have to look elsewhere, for the 1952 symposium was devoted rather to applications of the theory within its original field. The interpretation of that field was broad enough to permit inclusion of papers on hearing, speech, language, and semantics; but the majority of the papers (24 out of 39) deal with electrical communication. They are grouped under four general topics: transmission systems and coding, transmission in the presence of noise, transmission-channel characteristics, and television. A fact clearly evident is that the theory has demonstrated a tremendous inefficiency in present telephone and television transmission, and has stimulated interest in the development of more efficient methods.

Most of the papers are followed by discussions. These are lively and frank; the usual polite generalities are often dispensed with. It seems that the experts on communication theory have the same communication difficulties as the rest of us.

Two things I looked for but did not find. One is an explanation of the relation between the concepts of communication theory and those of the theory of statistical estimation. The other is an application of communication theory to the problem of library indexing and searching by machine methods. It is nevertheless true that communication theory has stimulated exchanges of ideas between workers in different and previously noninteracting fields. In this book there are, for instance, significant (and even violent) interactions between linguists who dare to speak up among engineers, and engineers who dare to try to measure language. I think this is good; let us have more of it.

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Principles of Color Photography. By Ralph M. Evans, W. T. Hanson, Jr., and W. Lyle Brewer. 709 pp. John Wiley and Sons Inc., New York, 1953. $11.00.

"Color photographic processes are chemical in nature in that the colorants (usually dyes) of the photograph must, in general, be chemically formed. The color reproduction characteristics of the process, however, are evidenced by the optical characteristics of the dyes after they are formed rather than by chemical reactions. The chief emphasis in the present work is upon these physical characteristics and upon the attendant effects which the picture may have on the observer. These effects are considered in both psychophysical and psychological terms. The chemistry of color photography is discussed to the extent of indicating the nature of the photographic materials and of the major chemical reactions involved in various types of color systems. . . ."

The initial chapters discuss color specification and measurement, the response of the eye to light in simple and complex situations, the relationship of the color photograph to the original scene, and the various factors that are involved in obtaining an acceptable print. The response of photographic materials and the formation of the colored image are then treated in detail. This is followed by a nontechnical chapter on various ingenious color photographic systems, both practical and impractical; it is of interest to note in connection with this that Clerk Maxwell presented the first demonstration of a photograph in color in 1861. The following chapters deal with theories of color formation, the chemical and optical properties of colorants, the measurement of densities, and color sensitometry. The final chapters treat the theories of duplicating, copying, and additive and subtractive processes of color reproduction. (The distinction between duplicating and copying is that in the first process the dye systems of the original and final prints are identical, whereas they differ in the second; matching of the prints can be accomplished by physical means in the first case, but visual means are required for the second.) The book ends with a twenty-page bibliography.

This comprehensive (although black and white) treatise on color photography will no doubt become the standard reference on the subject. It is a serious book: the only feminine photographs it contains are those of a draped Grecian bust, and this, as well as the background in physics, chemistry and mathematics the book requires, will preclude its use by laymen and popular photographers. Although it is directed primarily to research workers in the field, it will prove valuable to those using photography as an experimental tool, as well as to those dealing with practical problems related to colorimetry and the psychological aspects of color vision.

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Introduction to Tensors, Spinors, and Relativistic Wave-Equations (Relation Structure). By E. M. Corson. 221 pp. Hafner Publishing Company, New York, 1953. $10.00.

The theory of elementary particles deals with wave equations which describe the motion of a single particle with spin. The most familiar of these is, of course, the Dirac equation for a particle of spin 1/2, the Klein-Gordan equation for particles of spin 0, and the Kemmer-Proca equation for spin 1 particles. Once such equations are formulated, the corresponding fields must be quantized, and their interaction with other fields, particularly the electromagnetic field, must be introduced. The questions which arise, for example, the connection between spin and statistics, are of a fundamental nature and are thus most fascinating to theoreticians. Unfortunately, the theories are not intimately