According to Dr. Colin Cherry (who should know), the "measure of information" of Shannon and Wiener "has nothing whatever to do with meaning, nor with value, nor with usefulness of messages". There seems to be a contradiction here. Prof. J. Z. Young pinpoints the contradiction by saying that "what we still need is a greater unification of our approaches", but "The essence of the scientific approach is the realization that for each purpose we should use a different analogy". Prof. Ayer might have reminded us of the old problem of "the one and the many".

Those of us who enjoyed the hospitality of University College, London, and the stimulus of the oral delivery of these papers, will be glad to have this volume as a record. But a reviewer has a duty to appraise fulfilment of purpose. This is the first publication of the Communications Research Centre—"a first fruit of its activities" says the jacket. These individual essays doubtless contribute to the clarification of the problems of the Centre, and, in their several ways, they make excellent reading; but as a first publication of a research centre this volume puts remarkably little new research on record. This criticism is offered in no captious spirit. All who are alive to the vital importance of communication must have welcomed the establishment of the Centre. One cannot help asking whether this volume is the kind of publication which testifies to the serious research-intent of the Centre, or really furthers its object.

G. PATRICK MEREDITH

PROGRESS IN BIOPHYSICS AND BIOPHYSICAL CHEMISTRY

Progress in Biophysics and Biophysical Chemistry
Edited by Prof. J. A. V. Butler and Prof. J. T. Randall. Vol. 5. (Progress Series.) Pp. viii+231+9 plates. (London and New York: Pergamon Press, Ltd., 1955.) 55s. net.

THIS volume opens with a review of the reaction patterns of a coliform organism, by A. C. R. Dean and C. N. Hinshelwood. The application of kinetic principles to cellular growth, and the action of enzymes concerned therein, are lucidly surveyed and related to many different processes, of which adaptation and mutation may be mentioned. In their consideration of the physical chemistry of haemolysis and bacteriolysis by surface-active agents and antibiotics, J. H. Schulman, B. A. Pethica, A. V. Few and M. R. J. Salton are also concerned with the application of physical chemistry to living organisms, particularly microbes. The fact that the enzyme lysozyme brings about a specific depolymerization of the cell walls of certain organisms has resulted in the preparation of protoplasts which, although deprived of cell walls, are capable of metabolizing glucose at the same rate as intact cells. It is clear that the investigation of the unclothed protoplast is likely to be of special value in research on the mechanism of action of substances which influence cellular metabolism.

For obvious reasons, the direct action of ionizing radiation on enzymes and antigens, as discussed by E. C. Pollard, W. R. Guild, F. Hutchinson and R. B. Setlow, is a matter for particular current interest, while for quite another reason the structure and function of the chloroplast (J. B. Thomas) can be of practical interest in a world looking for new sources of energy, of which sunlight is an obvious one for

consideration. The theory of X-ray fibre diagrams (A. R. Stokes) is always a subject of some difficulty for the non-specialist, but the discussion given in this book is one that can be followed in general without great difficulty by those not carrying out research in this field. The last contribution in the volume is on recent studies on the reversible denaturation of proteins, by M. Joly. It is natural that Dr. Joly should spend more than two pages discussing possible definitions of protein denaturation and then fail to adopt any simple definition. His ultimate conclusion, that in spite of a certain similarity between all the observed phenomena there exist several types of denaturation and reversal depending on the protein considered and the denaturing agent used, is not unexpected. But it is most desirable that this rather ill-defined state should be discussed and, together with the means whereby it can be brought about, considered in the light of present knowledge of protein structure; this Dr. Joly has attempted to do with some success. It is most unfortunate that the 252 references to the original literature cited by him have been omitted from the main index of this volume owing to an oversight on the part of the publishers. It might have been better to have re-set the index and to have delayed the appearance of the book rather than to publish it with an incomplete index.

This volume adds one more to the many books in related fields which now appear annually and include in their title either the word 'advances' or 'progress'. None of the subjects surveyed in this volume is ineligible for consideration in one of the other annual review volumes; but for those whose special interest is in the application of physical methods to biological problems, there is undoubtedly an advantage in having this collection of articles within the covers of one book.

F. G. YOUNG

THE INSTITUTE OF BREWING

A History of the Institute of Brewing

By W. H. Bird. Pp. ix+139+16 plates. (London: Institute of Brewing, 1955.) n.p.

THE author, who was secretary of the Institute of Brewing until 1951, has produced an interesting and informative book. In 1886, Dr. E. R. Moritz, consulting chemist in brewing, was in the habit of holding informal colloquia; these crystallized into the "Laboratory Club", which published transactions and by 1890 had 250 members. Similar bodies were formed elsewhere, and in 1895 all were federated and later (1903) merged into one—the Institute of Brewing. During 1895–1903 the *Journal* represented its main activity; but further projects were under consideration. The Midland Counties Institute favoured setting up a school of brewing. Agreement was not forthcoming; but the Midland brewers attained their object independently, and the British School of Malting and Brewing at the University of Birmingham resulted (1900).

The essential objects of the Institute of Brewing were defined as the promotion of such sciences and arts as are of practical application to brewing and allied industries, and the dissemination of knowledge useful in such connexion. The whole of the technical personnel of these industries were eligible for membership. Six sections (now also one in Australia) held monthly meetings. In due course committees were set