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Scientific Aspects of Housing Problems

THE fundamental scientific problems of the building industry which underlie the housing question were touched upon by Dr. Stradling in a lecture on "Physics in the Building Industry" at the end of 1933, and again by Sir Harry McGowan in the Messel Memorial Lecture to the Society of Chemical Industry at Cardiff. They have also been indicated by Prof. Julian Huxley in his "Scientific Research and Social Problems" and in much greater detail, so far as the United States of America are concerned, by Mr. A. F. Bemis in "The Economics of Shelter", the second of three volumes in a series "The Evolving House".

Nothing corresponding with the latter study has hitherto appeared in Great Britain, but a report entitled "Housing England", which has now been produced by the Industries Group of Political and Economic Planning (PEP), 16 Queen Anne's Gate, S.W.1, ably fills this gap and is an important contribution to the discussion of the housing question which deserves close consideration by the scientific worker. If studied in conjunction with the housing statistics of the Census of 1931 just available, it will help to create a more scientific, more critical and more constructive attitude towards the problems of housing and of the building industry.

Although a comparatively small section of the report is devoted to actual research problems, this attitude supplies its outstanding characteristic. It recognises from the start that any sound solution of the housing problem must provide for reconstruction of the building and building materials industry, overhaul of building regulations and the setting up of national standards. The discussion accordingly ranges over wide fields of industrial and technical as well as of economic and social questions.

The core of the present housing problem in Great Britain is that of supplying suitable accommodation at rents within the means of the lower-paid workers of the community. The final report of the National Housing Committee stated that this represented the provision during the next ten years of at least a further million houses to let at rents of not more than 10s. per week. The present report reaches essentially the same conclusion, estimating that a minimum of 200,000 new houses a year is required for the next seven years, of which half must be available at rents averaging 10s. per week.

Leaving on one side the discussion of the political and financial aspects of this question, which the report suggests might be dealt with by means of a national housing company and a national building company, attention is directed to the unjustifiable variations in building costs throughout the country of the more or less standard three-bedroom non-parlour house. Technical and economic research on a comprehensive scale is essential for the attack on building costs. While such a research programme is properly the function of the building industry as a whole, the industry has not yet developed a collective organisation capable of undertaking the work. Accordingly the report regards it as essential that the Government should initiate a centralised housing research organisation to co-ordinate existing efforts so far as possible through existing organisations.

This is one of the most important recommendations of the report, and the section entitled "Research and Statistics" on which it is based, will be read with close interest by all scientific workers. At present even market research in the building industry is remarkably casual and incomplete, and largely in the hands of advertising agents. Vital information on proprietary and non-proprietary materials is unobtainable or obtained with difficulty owing to the law of libel. Lack of knowledge about building regulations, which vary from district to district, hampers the operations of building concerns outside their own immediate area. The possibilities of economies dependent upon improved management technique, such as the Taylor or the Bedaux systems, and the whole field of industrial psychology, have scarcely been considered or explored by the building industry. Much of the existing scientific work is not applied so quickly as it should be because its results either do not receive adequate publicity or are published in unsuitable form.

At the present time, there appears to be almost unlimited scope for the improvement of the facilities for the exchange and co-ordination of information on building progress, building technique, trade names and catalogues, co-operation between libraries and the like. Such work inevitably tends, moreover, to overcome one of the difficulties in the way of introducing new methods and the obstacles which the lack of scientific personnel presents to the practical application of research. One of the functions of such a central authority might well be the co-ordination of information on training

facilities, the type of instruction required, openings, etc.

This economic and statistical research is intimately related with the technical research work discussed in the same section of the report. The scarcity of men with a scientific training on the contracting side of the industry is in extraordinary contrast with the executive branches of engineering or even cotton, and presents a very serious obstacle to progress. The expenditure on research by the industry itself is noticeably smaller in proportion to Government expenditure than in other trades, but the wide scope of the industry is one of the reasons why scientific research has made so little headway. In addition, research of fundamental importance to the industry is being carried out by other industries, though rather from the point of view of the manufacturer than from that of the consumer. Special stress is laid upon the necessity for adequate research from the latter point of view, on the need for full-scale experiments and on the importance of adequate financial support for the Building Research Station.

The most important criticisms advanced of existing research organisations are the lack of direct co-operation in direction, and their inability in a non-scientifically minded industry to get the results of their work accepted by the industry. The danger of research financed by or carried out mainly for proprietary material interests is also stressed, as is the need for an authority which would facilitate experiment with new systems of construction.

One of the chief obstacles to such experiment lies in the chaotic legislative position affecting building and the building industry, particularly the restrictive and antiquated regulations which, in effect, limit the rate of introduction of new materials and new methods. Despite the attention directed to this important factor by the first report of the Council for Research on Housing Construction ("Slum Clearance and Rehousing", P. S. King and Son, Ltd., Great Smith Street, S.W.1; 1934), which asserted that the diversity and obsolescence of building regulations is a principal obstacle to progress and recommended the amendment and more enlightened administration of the system, as well as a more flexible system of by-laws, insufficient attention has yet been given to this factor.

Examples quoted in the report of obstacles to the introduction of improved lead piping, fire-proofing practice and the like indicate the absurdity of the

present position. Here, as elsewhere, there is to be found a plethora of evidence that the statement quoted by Mr. Bemis from a leading American engineering publication is equally valid in Great Britain: "The average house to-day is a shoddy affair, of high first cost, and soon reduced to a condition requiring constant maintenance; it is built as it was a great many years ago, by hand methods, with every piece cut in the field by men whose horizon is limited to the locality in which they live, whose training makes them impervious to the adaptation of new methods, whose financial capacity does not permit of modern research or study . . . and who themselves are the victims of profiteering material dealers."

If the report produced by Political and Economic Planning reveals very clearly the immense difficulties in the way of a really scientific housing policy, and in placing building and the building industry on a satisfactory scientific basis, it is far from being a depressing document. Its lucid and constructive criticism and pertinent recommendations do not merely point the way forward and assist in the clarification of public opinion on this important matter. They also reveal the wide field which here confronts the scientific worker, both as such and as a citizen, to secure that public policy and action are determined by definitely ascertained facts and not by archaic tradition or prejudice.

Reviews

Early East Africans

The Stone Age Races of Kenya. By Dr. L. S. B. Leakey. With Appendices by T. W. P. Lawrence, Sir Grafton Elliot-Smith, Sir F. Colyer, L. S. B. Leakey. Pp. xii+150+82 plates. (London: Oxford University Press, 1935.) 38s. net.

DR. LEAKEY led his first archaeological expedition to East Africa in 1926, his second in 1928, and his third in 1931. In this imposing memoir, he gives an account of the human remains found on all three expeditions. Rich as were the discoveries made in the first and second expeditions, they were thrown completely in the shade by the outstanding importance of those made during the third expedition.

Dr. Leakey's third expedition began by a visit to the site of the discovery of Oldoway man in Tanganyika Territory. In the Oldoway district the examination of the grave site was a minor matter, for it was in this area that Dr. Leakey discovered a sequence of deposits bearing evidence of the presence of man in East Africa from the earliest Pleistocene times onwards, and by early Pleistocene Dr. Leakey means what most geologists call late Pliocene. He speaks of the 'culture' represented by the implements in the oldest deposit as Oldowan—a crude and very early form of hand-axe. Overlying deposits reveal this early type of stone axe in the process of being transformed into the true Chellean and later into the Acheulean form of *coup-de-poing*.

In Tanganyika, Dr. Leakey found nothing of the men responsible for the early hand-axe industry, but early in 1932 he moved his expedition to that part of Kenya Colony which extends to Kavirondo Bay, on the eastern shore of Lake

Victoria, and had his search crowned with success almost immediately. The land into which he came was made up, just as at Oldoway, of deposits laid down in the Early and Middle Pleistocene periods; only the fauna at Kanam—the site of the most important discovery—was rather of an earlier date than the oldest at Oldoway. There were the same crude stone implements in the basal deposits at Kanam as at Oldoway.

Very soon after its arrival on the eastern shore of Lake Victoria, the expedition had the fortune to find at Kanam a fossil fragment near the base of the Pleistocene deposits. This fragment represents the front part of the lower jaw of one of the earliest human beings known to us. Never, perhaps, was a more puzzling piece placed in the hands of a student of fossil man. That it is human and that it is very ancient there can be no doubt. But by a very strange coincidence, the chin of this representative of early humanity was the seat of a bony tumour of an exceedingly rare kind. The tumour, which grew from the deep aspect of the lower jaw, just behind the chin, has spread over and obscured the normal features of this region. Enough remains, however, to make quite certain that in dimensions and in its features, the chin region of this early being was shaped as in primitive types of living humanity—such as the aborigines of Australia. Dr. Leakey describes the Kanam man as having "a very pronounced mental prominence". Far from being "very pronounced" the Kanam "mental prominence" or chin represents a low or early stage of chin development.

Dr. Leakey does not hesitate to infer that the rest of the Kanam man will prove to be in keeping with the fragment of his jaw, and regards him as the ancestor of modern races of mankind—*Homo*