Palestinian Prehistory

THE selection of archæological finds from the caves of the Wady al-Mugharet at the foot of Mt. Carmel, Palestine, now exhibited at the British Museum (see NATURE, Feb. 3, p. 169), repays careful inspection. By affording a comprehensive view of the results achieved since 1929 by the Joint Expedition of the British School of Archæology in Jerusalem and the American School of Prehistoric Research under the field direction of Miss D. A. E. Garrod, the exhibit fully confirms previous conclusions, based on the periodical reports, as to the importance of the excavations in these caves, not only for the prehistoric archæology of Palestine, but also for prehistory in general. The discovery of so large a number of skeletons of man of Neanderthaloid type, to whom Sir Arthur Keith would assign generic rank under the name of *Palæoanthropus Palestinensis*, and including the oldest known complete human skeletons, for which a geological dating as belonging to the Riss-Würm interglaciation is given, would alone place these investigations in the first rank of scientific importance; but in addition they have brought to light a new civilisation and a new race, the Natufian, of late palæolithic or mesolithic age, in which remarkable features of racial character and culture open up suggestive lines of thought in connexion with prehistoric custom and belief and racial distributions.

The exhibits include examples of the small flakes of the Tayacian, comparable with implements from La Micoque, the Upper Acheulean hand-axe, the leaf-shaped point of the Lower Aurignacian, hitherto known only from Africa, Middle Aurignacian scrapers, comparable with those of Western Europe, and characteristic scrapers and gravers from the Upper Aurignacian. The Natufian culture, of which the first evidence was found in the Wady el-Natufa, whence the name, is well represented, among the more striking features being the remarkably elaborate composite head-dresses of shells which were found on the human skeletal remains, and the evidences of the beginnings of agriculture in the form of sickle blades and hafts. The latter are further noteworthy as including among their number two hafts ornamented with carvings of animal heads. These with other gravings on bone or stone are the first and indeed the only known examples of the art of stone age man to be found in Palestine.

The human bones show evidence of cannibalism. Sir Arthur Keith, in reporting on the human remains, judged them to be unique in racial character, but found that certain features suggested affinities with pre-dynastic Egypt. The Natufian faunal remains include the true horse, the Persian fallow-deer and the spotted hyæna, now found only south of the Sahara. The frequent occurrence of remains of the gazelle point to a dry climate and open country, contrasting with conditions in late Mousterian times when the abundant remains of deer suggest a forested area with copious rainfall.

It will thus be seen that the exhibition covers the complete sequence of Palestinian prehistoric cultures from Acheulean to Bronze Age, the last named apparently following on immediately after the Natufian, or, in years, a period ranging from about 100,000 years ago to approximately 6000 B.C.

Future of Artificial Lighting

MR. C. W. Sully, president of the Illuminating Engineering Society, gave an interesting address at the British Industries Fair at Birmingham on February 22. He pointed out that although great progress has been made in illumination during the past fifty years, yet compared with some other applications of science, such as transport or telephony, its progress appears relatively slow. There is no occupation we can pursue and no recreation we can indulge, in which the eyes are concerned, that does not offer problems in lighting. Too frequently progress takes place in a succession of jerks. As an example, consider the headlights of a motor-car. With increased speed stronger lights were demanded. Concentrated beams, well directed towards the objects requiring illumination, served the driver of the car excellently. But it was soon found out that these beams were a menace to oncoming traffic and glare from headlights is still an outstanding problem.

New devices, new methods and new materials are constantly changing the technique of lighting and developing new sections of industry. The new methods of utilising gaseous tubes producing various colours, the new electric discharge lamps, the continually extending use of stainless steel for reflectors and the applications of the new synthetic plastic materials to lighting fittings may be mentioned. In some cases buildings like cinemas and theatres are expressly designed for use by artificial light. Natural lighting has become a minor matter and is in some cases entirely omitted. In the case of blocks of buildings in congested city areas, access of daylight is imperfect and so costly as to be almost prohibitive.

It is accordingly now being suggested that, in these circumstances, the effort to furnish natural lighting should be abandoned, and that efforts should be concentrated on the provision of adequate artificial lighting. The question arises as to whether there is anything inimical to health in this procedure. This is a question of moment to the lighting industry. The ever-increasing height of buildings and other developments will probably accentuate the need for artificial lighting at the lower levels.

The city of the future has been visualised as consisting mainly of immense flat-topped buildings, rising in terraces from the ground-level, the upper walks being reserved for pedestrians, who would be provided with connecting bridges crossing the roadways at intervals. Roadways at the ground level would be used exclusively for motor traffic. If this is the trend of development, then lighting at the lower levels would be mainly artificial. A suggestion has been made that football, athletic contests and other sports may, in the future, take place in vast covered stadiums where diffused artificial lighting, resembling light from the natural sky, would be attainable and where difficulties arising from our capricious weather would be largely eliminated.

Mr. Sully also discussed the lighting of schools and factories. In school buildings the natural and

artificial lighting is often very defective. In many recent factories excellent equipment is installed, but in some of the older buildings, antiquated and imperfect arrangements still persist. Britain, almost alone amongst the civilised countries, has even now no specific requirement of adequate lighting in its Factory Act, although this step was advocated twenty years ago by a Departmental Committee.

Mr. Sully thinks that street lighting lags behind modern requirements. In a factory, five foot candles is regarded as essential for fine work. According to the B.S.I. specification, one per cent of this is given as the candle power sufficient for a moderately lighted street. This only represents 1/10,000th of the average value of unrestricted daylight from an overcast sky. No wonder the accident risk by night is greater than that by day. The problem of public lighting is complicated by the fact that many roads now fulfil functions quite different from those for which their lighting was originally designed. In Mr. Sully's opinion, the lighting of the King's highway is a national rather than a parochial duty. The Ministry of Transport should assume a greater degree of responsibility for its illumination.

Association of Technical Institutions

THE annual general meeting of the Association of Technical Institutions was held in the Drapers' Hall, London, on February 23–24. During the first session Mr. Will Spens, Master of Corpus Christi College, Cambridge, and newly-appointed chairman of the Board of Education's Consultative Committee, who was elected president of the Association for the year 1934, delivered his presidential address.

At the outset, Mr. Spens suggested that he was unable to enter into a discussion how to enhance the value of technical education, since his knowledge of that, and of industry and commerce, was not very considerable. However that may be, his address demonstrated the closeness and profundity of his knowledge of the field of education generally. He insisted on the value of literary studies in teaching men to think: he would not, therefore, have traditional academic education weakened, although he thought too much emphasis had been placed upon it. He pleaded for research in applied science, but stressed the need for inculcation of scientific *method* rather than the simple acquisition of scientific knowledge.

Among the papers read during the following sessions was one on "Education for Commerce from the Employer's Point of View" by Mr. F. Hickinbotham, of Birmingham. He emphasised the point that commercial education lags behind other branches of technical education because of the fact that the need for specialised education for commerce arose later in commerce than in the sciences and skilled trades. It is impossible, for example, to practice chemistry, pharmacy, engineering, etc., without a body of specialised knowledge; but many branches of commerce do not require this specialised knowledge: hence educational facilities have developed slowly. The present need for systematic instruction, however, is occupying considerable attention. Mr. Hickinbotham believed that the efforts which are being made to introduce commercial subjects into the secondary school curriculum were mistaken. In the secondary school the pupil should receive a general education, and afterwards take a one- or two-year full-time course in a commercial college, where instruction given by teachers with commercial experience would be better than that given by teachers who acquire their knowledge merely from books. One of the greatest needs of the world is to break down the barriers of nationalism and to promote a spirit of internationalism. To this end the first essential is to know the language the other man is speaking. Languages, therefore, should find an important place in all commercial courses.

Mr. Hickinbotham's paper had a special interest since the thought now being given to commercial education is a reflection of some of the wider anxieties of our civilisation. The science of production has developed swiftly and efficiently: we have scarcely begun to understand the science of distribution. Those responsible for technical education are alive to their responsibilities in this connexion. Evidence of this was submitted as the meeting proceeded, when a "Report on National Certificates in Commerce", prepared by a joint committee of the Associations of Technical Institutions, of Principals of Technical Institutions and of Teachers in Technical Institutions, was accepted. While it does not yet seem possible to draw up a scheme for national certificates in commerce such as those applying to engineering, chemistry, etc., the report goes far to establish means by which it is hoped that national certificates in the full sense of the phrase may ultimately be available.

Dog Breeding for Show Points

"WE have bred dogs for all sorts of show points, but we have never considered whether our principles of breeding have been to the advantage of the dog itself. We have thought only of our own profit." So concludes the editor of the *Countryman*, who asks whether or not our dog breeding principles so far, judged entirely from the dog's point of view, are not a bit 'low down' and, further, why should not some breeding now be done for intelligence? In a series of articles now appearing in this quarterly review, these questions are considered by a number of people. Dr. Darling expends most of his space in proving to his own satisfaction that he is quite unable to decide as to what could be regarded as intelligence in the dog, and argues that in any event the experiment suggested has already been carried out with the working hill collie. But he agrees with the editor of the *Countryman* in stating that there can be no defence for many show points. The standard of the St. Bernard is merely acromegaly, that of the bulldog achondroplasia; the toy dog is hyperthyroidic, and terriers microcephalic. Prof. L. C. Dunn, of Columbia University, in a very well-written article, suggests that it is not intelligence that is