

Reference may be made to one more paper on wheat hybrids, by Miss Melburn and Prof. Thompson (*Amer. Jour. Bot.*, vol. 14, p. 327). In *T. spelta* ($n=21$) \times *T. monococcum* ($n=7$) the hybrid is completely sterile, and the heterotypic division shows from five to no bivalent chromosomes. The remainder

mostly split, but in the second division they lag and form extra nuclei. The hybrids between different types of wheat can thus be arranged in a series according to the amount of pairing of chromosomes and the irregularities in the behaviour of the univalents.
R. RUGGLES GATES.

The Introduction of Civilisation into Britain.

AT the anniversary meeting of the Royal Anthropological Institute, held on Tuesday, Jan. 24, the outgoing president, Mr. H. J. E. Peake, delivered an address on "The Introduction of Civilisation into Britain." He said that it seems certain that the art of agriculture, the first step in civilisation, was first practised in the Near East, more probably in Asia than in Africa, and that the first grain-growers were also potters. At an early date both these arts were introduced into the Ægean area and into the Plain of Hungary, and Prof. Childe has shown how they spread from the latter area to Switzerland, to the Rhine, and to the country around Liège.

Dr. Frankfort has recently pointed out the existence of a trade-route in Early Minoan times; this started from the head of the Gulf of Corinth and reached southern Italy and Sicily. Along this route passed commodities from the second city of Hissarlik. Frankfort suggests that this trade was carried farther west, and Childe has noted the presence of Early Cycladic beads in Portugal. This indicates that the elements of civilisation had reached the Atlantic coast before 2200 B.C.

Prof. Bosch-Gimpera has shown that early in the Copper Age there were two small centres of civilisation in the Iberian peninsula, one at Almeria in the south-east and the other in the south of Portugal, and that between them the Caspian natives used a rough pottery, based on leather models. These people had evidently learned the first elements of civilisation from the eastern traders, and had developed a rude civilisation that Bosch-Gimpera calls "la civilisation des grottes." He has also shown that this type of rude pottery spread so far as the Maritime Alps.

It is believed that agriculture and the potter's art reached Britain at the dawn of the Neolithic Age, and this view, as we shall see, is justified. In 1910, Mr. Reginald Smith described some round-bottomed bowls, one of which came from Mortlake, and some similar fragments from Peterborough, and pointed out that pottery of that type has been found in Finland and East Sweden. In 1925, Mr. T. D. Kendrick described two neolithic wares, one of which

was found at Rodmorton and other sites in Gloucestershire and Wiltshire, the other at Mortlake and Peterborough, and in the same year Prof. O. Menghin also described these wares under the names of *Grimston-keramik* and *Peterborough-keramik*, suggesting that the former is earlier than the latter. Quite lately Mr. E. Thurlow Leeds has discussed the problem, criticising Menghin's terminology, and claiming that the first ware arrived from the south and the second from the north-east about the same time.

The best evidence comes from Windmill Hill, Avebury, now being excavated by Mr. Alexander Keiller, who has kindly allowed this information to be published. Here have been found three concentric rings of intermittent ditches, resembling those at Michelsberg, but without the distinctive tulip-shaped vase of the latter site. Pottery was found abundantly in the ditches, but in two layers separated by an almost sterile interval.

In the top layer, along with fragments of beakers, were found a number of pieces of the *Peterborough-keramik* and many sherds resembling the *Grimston-keramik*. In the lower layer, however, the prevailing ware is different, but the paste somewhat resembles that of the *Grimston-keramik*. Mrs. Keiller has restored several pots, which resemble closely some found in the lake-dwellings of Switzerland, and are called by Reinerth the *Westische-keramik*; these seem to have been introduced into Switzerland from the basins of the Rhone or Saône.

It appears likely that the elements of civilisation passed up the Rhone valley into Burgundy, where this *Westische-keramik* developed among a people who lived in fortified villages of the Michelsberg type. Thence the potter's art, and the elements of agriculture, spread into Switzerland, through the Belfort Gap into the Upper Rhine basin, where it developed into the characteristic Michelsberg type, and into the north of France and Belgium, where it spread over a large area, in which was a culture called by Bosch-Gimpera "la civilisation du silex." From this last region it reached the south of England some little time before the arrival of the *Peterborough-keramik* on the north-east coast.

Marine Oil-Engines.

IN the first Thomas Lowe Gray lecture, delivered before the Institution of Mechanical Engineers on Jan. 6, Prof. C. J. Hawkes makes an interesting survey of the past development, present status, and probable future development of the marine oil-engine. Past development is but briefly outlined. In regard to the present position, attention is directed to the fact that recent improvements in fuel consumption of marine steam turbine installations have reduced the advantage in this respect held by the oil-engine. In the tests conducted by the Marine Oil-Engine Trials Committee, the Still airless-injection two-stroke engine, consuming 6880 B.T.U., and the Doxford airless-injection opposed piston two-stroke engine, consuming 7570 B.T.U. per brake horse-power per hour, were the best performances, and it is shown that while the former has a less efficient fuel com-

bustion, this is more than balanced by the energy recovered from the jackets and exhaust gases. It is estimated that the minimum consumptions possible at the present time are 6240 and 6820 B.T.U. per brake horse-power hour for the Still and Doxford engines respectively.

In a discussion of possible improvements it is regarded as doubtful whether the installation of waste heat boilers for the purpose of increasing the overall efficiency is justifiable. The employment of high speed engines transmitting power through hydraulic clutches and mechanical gears, which effects a saving in weight, etc., is considered to be limited to four-stroke trunk-piston engines of moderate power. The four-stroke single-acting engine has much to recommend it for moderate powers, and for larger powers, the two-stroke single acting is preferred to the four-