Archæological Museum of Florence and of the Musei i Scavi dell'Etruria, when he was responsible for the excavation of Vetulonia, Arezzo, Cortona and Orvieto, investigations of the first importance for our knowledge of the Etruscan civilization. After his appointment as professor of archæology in the University of Florence in 1922, he also became head of the archæological mission to Cyrene, where important excavations were carried out under his charge.

WE regret to announce the following deaths:

Prof. A. J. Ewart, F.R.S., professor of botany and plant physiology in the University of Melbourne, aged sixty-five years.

Miss A. Lorrain Smith, O.B.E., formerly of the British Museum (Natural History), known for her mycological studies, on September 7, aged eighty-three years.

News and Views

Heavy Nitrogen

AT a recent meeting of the American Chemical Society Prof. H. C. Urey reported that he had prepared heavy nitrogen in considerable quantities (see also p. 512). Ordinary nitrogen has long been known to consist of two isotopes of mass numbers 14 and 15, the heavier one being present, however, to only four parts in a thousand. Isotopes of several elements have been already separated in a fairly pure state; of these hydrogen and deuterium are the best known, but other examples are lithium 6 and 7, and neon 20 and 22. The difficulty of the problem solved by Prof. Urey can be appreciated by comparing it with that presented by the neons, where the percentage difference in mass is greater and also the heavier isotope is naturally present to the extent of nearly 10 per cent, instead of the half per cent in the case of nitrogen. It is stated that the heavy isotope is being separated at the rate of a quarter of a litre a day. The separation of pure heavy nitrogen will undoubtedly lead to a great deal of important work in nuclear physics. Nitrogen 15 differs from nitrogen 14 simply in the structure of its nucleus. there being one more neutron present in the heavier type. Ordinary nitrogen has already proved most interesting, since it can be disintegrated in a variety of ways by bombardment with α-particles, neutrons, protons and deuterons. The investigation of the behaviour of heavy nitrogen under the same conditions should lead to valuable conclusions about the effect of the extra neutron in the nucleus. It has also been suggested that heavy nitrogen will be of great service for research in physiological chemistry, since various substances which are important in the body can be made containing some heavy nitrogen instead of ordinary nitrogen, and while their behaviour will be unaltered, these particular molecules can always be identified later by means of the heavy nitrogen atoms.

Mentality of Fish

DR. J. GRAY'S evening discourse to the British Association delivered on September 6 at Nottingham shows how closely the reactions of fishes resemble those of man. In the behaviour of man the involuntary machine-like reflex plays a very important part, and in a fish that is swimming freely the movement involves a high degree of co-ordination between a large number of muscles; the whole of this highly co-ordinated mechanism being completely independent of that part of the fish's brain which corresponds to our cerebral hemisphere and therefore to that part of the brain which is associated with consciousness in ourselves. It is well known, however, that a fish may be trained to make mental associations, and in the last few years the problem has been subjected to rigid scientific investigation. By experiment it is found that a fish is sensitive to a great variety of gentle stimuli such as a very slight change in temperature and the shape and colour of objects in its vicinity. Fish are also capable of carrying out highly complicated migratory excursions. In these types of behaviour Dr. Gray asks us if we do not see most if not all the activities of the human race. Almost certainly the association powers of a fish are on a much lower level than those of man, but the power is there, and it is difficult if not impossible to put our finger on any one of our mental powers and say, "Herein are we a race apart, elevated above the rest of the world". Dealing with the migratory experiments with the Pacific salmon, in which that fish is proved always to return to its own native waters, he says, "I venture to think that if we were to have carried out comparable experiments on a race of human beings, and got similar results, we would have said 'They do it, as you or I would do it, consciously noting the landmarks, memorising them, and so retracing their steps'—in fact they are performing a conscious act, a premediated, thoughtful, and purposive act. Are we to apply the same conclusions to the fish—if not, why not?"

Rivers and their Formation

IN connexion with the recent British Association meeting at Nottingham, a public lecture on "Rivers", which was abundantly illustrated, was delivered by Mr. R. Kay Gresswell in Lincoln on September 3. Mr. Gresswell pointed out that when a river has once been formed, by virtue of its motion the water is able to carry a load consisting of rock actually dissolved in the water and also of finely powdered rock and pebbles of all sizes, which serve as eroding agents. When it has acquired a load, the river can use it as a kind of file or battering-ram with which to erode its banks and bed and so add to the quantity

it is transporting until it becomes fully laden. The main features of a river are the direct result of the water constantly trying to adjust its bed to suit its load. If the river enters a reach fully laden and the slope is such that the water continues to flow at its original speed, then just as much material will leave that reach as enters it and so no erosion takes place. Should, however, a fully laden river enter a reach the slope of which is less steep than it has been upstream, the rate of flow of the water will be decreased and a proportion of the load is then deposited. This mostly occurs at the beginning of the reach and thus the river gradually steepens the slope until it becomes sufficient for the entering load to be carried through.

IN the lower part of its course, a river normally enters upon a plain. Here the rate of flow is greatly diminished and the fully laden river proceeds slowly towards the sea. In turning a corner, the speed on the outside of the curve is always much greater than that on the inside. This results in the water on the outside being able to take on an additional load and thus erode the bank. Conversely, the water on the inside is unable to carry the whole of the load it already possesses and deposits sediment on the inside of the curve. The bend thus becomes steeper and steeper, and it is owing to this action that rivers always meander in the plain tract. Quite commonly the river still does a little actual erosion and in consequence by the continual change of position of the various loops of the meanders, the general level of a strip of land, about one or two miles wide in the case of rivers the size of those found in England, is gradually lowered, the edges of this band, which mark the extreme limit of past meanders, often forming steep cliff-like slopes. If, as the result of earth-movements, the general slope of a river-valley be increased, the river flows more quickly and is thus able to increase its erosion. It sometimes happens that a meandering river is thus re-juvenated, and in that case the river deepens its bed in the shape the meanders then happen to possess. The land between the individual loops are then in time left standing high above the new low river-level. This has happened in the case of the River Wye in Monmouthshire, and has resulted in very beautiful scenery.

Fauna and Climate in Early Palestine

IN view of the interest of the various geographical and distributional problems in the prehistory of Palestine, to which a notable contribution has been made by the preliminary examination of the finds in the bone-bearing beds of Bethlehem (see NATURE, Sept. 4, p. 431) attention may be directed to a communication from Prof. L. Picard, of the Hebrew University, Jerusalem, which appears in the recent issue of the *Proceedings of the Prehistoric Society* (Jan.–June). Prof. Picard there examines in detail the data of palæontology, geology, archæology and stratigraphy in their bearing, first on the climate of Palestine in prehistoric times, and secondly on the origin and geographical relations of the fauna of that period. Writing before the publication of the evidence from Bethlehem, he concurs with Miss Bate's previously published conclusion as to the complete absence from Palestine of a boreal (cold period) fauna, though its existence has been asserted; but he is unable to accept her interpretation of the palæontological evidence as pointing to a change from a forested landscape with humid conditions to a drier climate and more open country. He finds that while there were a number of forms, now extinct, contemporary with the old Acheulean—the earliest evidence of man's handiwork then available to him—some of these, such as probably the hippopotamus, survived even so late as Biblical times.

As a whole, the various classes of evidence (in palæontology, trees and plants, as well as land and aquatic fauna) are interpreted by Prof. Picard as concurrently pointing to the fact that no important change in climate takes place down to recent times. In fact, the present climatic conditions, the aridity of the eastern section and the Mediterranean or 'etesian' climate of the western, existed in the Pliocene, and date back to the Upper Miocene. Further, the geographical conditions in the south were such as to preclude migration to, or from, Africa in the Pleistocene. The fauna which has been designated as African–Asiatic has been domiciled in Palestine since the end of the Miocene and can be regarded as endemic during the Plio-Pleistocene. The problem, it will be seen, is of considerable general interest, but to palæontologist and archæologist more especially in relation to recent discovery in East Africa. Further evidence from Bethlehem will be awaited eagerly.

Human Skeletal Remains in London

EXCAVATION work in Farringdon Street, London, E.C.4, for the foundations of an extension of the offices of the *Evening Standard* has brought to light a large number of human skeletal remains. About three hundred skulls and two thousand other bones have been found. It is suggested that the excavation may have opened one of the pits in which victims of the great plague of 1665 were buried indiscriminately. There were a number of these pits situated in various parts of London. One of the largest was in Tothill Fields, Westminster, near where Caxton Hall now stands; another near Newgate was adjacent to the site of Christ's Hospital, the Bluecoat School, demolished for the extension of the Post Office, and still another was in Whitechapel. Dr. A. J. E. Cave, of the Royal College of Surgeons, who has inspected the recent finds, is of opinion, according to a statement published in the *Evening Standard* of September 10, that, judging from their condition, they are probably the skeletons of men, women and children who died in the seventeenth century and may well have been victims of the plague. They are all of the same type, and differ but very slightly from typical skulls of to-day. Though they have not yet been submitted to an exact examination, Dr. Cave is stated to have said that the skulls appear to have a