a note of warning. Many parents still retained the impression that chemistry afforded a rapid road, if not to wealth, at least to a comfortable competence, and that it involved a less expensive course of preparation than for other professions. A keen love of the subject was essential to success; but those who were attracted to chemistry should be prepared to face a great deal of hard and often unattractive work, and to make the very real sacrifice which a professional career inevitably involved. The course of training of the average chemical student was of a university character and made the same demands upon the financial resources of parents as that for medicine and the law.

The present position of the profession should inspire its members with feelings of pride and deep satisfaction, and should stimulate them to increased endeavours to raise it still higher towards that position of pre-eminence which it was surely destined to occupy.

There was scarcely a department of human activity which was not influenced more or less profoundly by the discoveries and developments of chemistry, nor was there a single individual in the community whose comfort had not been increased and whole daily life had not been made happier—or, at least, more tolerable—through the beneficent operations of that science. What discoveries in chemistry the future might hold, and in what way those discoveries might still further modify the material life of man, none could say, but it was not unlikely that if any distinctive term should be applied by the historian of the future to the era on which we were now entering, he would describe it as the "Age of Chemistry."

Biology of Mosquitoes and the Disappearance of Malaria in Denmark.

AN interesting memoir on the biology of Danish Culicidæ has recently been completed by Dr. C. Wesenberg-Lund (Mem. Acad. Roy. Sc. et Lettres de Danemark, Section des Sciences, Series 8, vol. 7, No. 1, 1921). Forty forest-ponds were subjected to regular fortnightly exploration for some years, and from them twenty-five species have been obtained, twenty of which have been reared from larvæ. Among these are four species of Ochlerotatus known from America, but not hitherto found in Europe. Observations on the habits of the larvæ lead the author to support the general conclusion reached by other recent workers that the anal gills are best developed in those larvæ which feed at the bottom of the water. The pupæ are, as every one knows, capable of movement, but they are much more stationary than is usually believed; indeed, the author goes so far as to say that usually there is no locomotion during the whole of the pupal stage. An attempt has been made to work out the life-history of each species of Culicine from the laying of the egg onwards, and the author records many interesting observations. For instance, *Ochlerotatus communis* was found to lay its eggs singly on withered leaves or on the ground underneath these; the eggs are hatched in midwinter or early spring—many of them in April—and the imagines emerge in the first half of May. Mating takes place shortly afterwards, but the craving for blood does not arise until the latter part of June. Eggs are deposited upon dry bottoms from August to December, but do not hatch until they have passed through a period of frost. The biology of *Taeniorhynchus Richardii* also presents features of special interest; the siphon of the larva pierces the submerged roots of aquatic plants and gains access to the air in the intercellular spaces; the siphons of the pupæ are brought into close apposition at their tips and are inserted into submerged roots.

In an important concluding chapter on the three species of Anopheles—*A. plumbeus*, *bifurcatus*, and *maculipennis*, the species found also in this country—the author deals especially with the biology of *A. maculipennis*, well known as the chief carrier of malaria in Europe. He states that in Denmark this species sucks blood from domestic animals—pigs, cattle, horses—that it is seldom seen in the open, but is found, often in incredible numbers, hanging, sluggish and blood-filled, from the ceilings of pigsties, cowsheds, and stables. Only exceptionally does it suck the blood of man, whereas in Mediterranean countries it is an outdoor species feeding largely on human blood. Dr. Wesenberg-Lund considers that in Denmark *A. maculipennis*, which is there living near the northern limit of the range of the species, has ceased to be an outdoor species sucking the blood of man, and has taken to an indoor life and restricted its attacks to farm animals. In his opinion, this change in habits has been the main factor in the disappearance of malaria, the last great epidemic of which took place in Denmark in 1831.

The change in the habits of the mosquito followed an alteration in agricultural methods about a hundred years ago. Whereas previously the swine had been driven to the woods to feed on mast, they and other farm animals were thenceforward housed. The stables, etc., form so many traps which attract mosquitoes by the odour and heat of the animals within, and once within the stable the mosquitoes find all they need until the time arrives for pairing and egg-laying. Thus the connection between man and *A. maculipennis* has been broken in Denmark, and malaria was therefore bound to disappear. The author remarks that if the measurements of the length of this mosquito given by Meigen (1818), when the species presumably fed in the open and largely on man, are correct, there has been an increase in size during the intervening century, though the species is there living near the northern limit of its range.

The Unity of Anthropology.

AT the annual meeting of the Royal Anthropological Institute on January 24 the president, Dr. W. H. R. Rivers, delivered the presidential address, taking as his subject "The Unity of Anthropology."

The aim of the address was to show the unity which underlies the apparently diverse interests of the various branches of anthropology. No student of simple societies can fail to recognise this unity, for the different aspects of culture which are readily distinguished from one another in advanced civilisations are in the simple societies so intertwined and interdependent that it is hopeless to understand any one aspect without studying the whole. It is from the students of more advanced forms of human society that we need a more complete recognition of the unity of anthropology.

The unity of ethnology and archæology was illustrated by means of recent discoveries of the Rev. C. E. Fox in the Solomon Islands, where after the

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bodies of the chiefs have been eviscerated they are interred within flat-topped pyramidal mounds, from the surface of which a shaft leads to the recess in which the body is placed. A dolmen is erected on the mound, by the side of which is placed an image in human form designed to receive the soul of the dead chief. These, together with other features, such as the belief in two souls, a cult of the sun with the idea of marriage with the sun, and a tradition of descent from an incestuous union, all connected especially with the chiefly clan, form a body of evidence which shows so many points of resemblance with ancient Egypt in detail that it cannot be neglected by the Egyptologist. It suggests that the rapidly increasing material provided by ethnographical research may help to elucidate some of his most difficult problems.

It was pointed out that it is only in such remote regions as Melanesia, which have not been overrun by later invasions, that we can expect to find survivals of the culture of early voyagers.

The relation between philology and ethnology was illustrated chiefly by reference to phonetics. It was pointed out that in such a region as Melanesia the philologist can now study living examples of transitions and interchanges for the existence of which in Europe his chief evidence is drawn from dead languages, impeded by the limitations which are the necessary result of fixation by means of writing. It was also shown by examples from Melanesia how features of grammar and syntax can be explained as the result of social interactions.

The present barren state of physical anthropology, in so far as it deals with living races, was ascribed to the neglect to utilise the findings of ethnology as working hypotheses and stimuli to new lines of research.

The address concluded with a consideration of the means whereby the Royal Anthropological Institute might promote the recognition of unity. It was pointed out that a scheme, already under consideration, whereby societies dealing with different aspects of human culture should be housed under one roof, with the common use of libraries and lecture-rooms, would contribute to this end; and it was suggested that the Institute itself might give much more attention than it does at present to papers and discussions which would bring out the common purpose of the more specialised studies.

Geology and the History of London.[1]

NUMEROUS small streams now "buried" under London are indicated on the new 6-in. Geological Survey Maps constructed by the author, and the historical research involved in tracing them has led to an appreciation of the connection between the geology and topography on one hand, and the original settlement and gradual growth of London on the other.

The reasons for the first selection of the site have been dealt with by several writers: below London the wide alluvial marshes formed an impassable obstacle; traffic from the Continent came by the ports of Kent, and, if destined for the north or east of Britain, sought the lowest possible crossing of the Thames. This was near old London Bridge, where the low-level gravel on the south and the Middle Terrace deposits on the north approached close to the river-bank. A settlement was obviously required here, and the northern side was chosen as the higher ground. The gravels provided a dry, healthy soil and an easily accessible water-supply; they crowned twin hills separated by the deep valley of the Walbrook, bounded on the east by the low ground near the Tower and the Lea with its marshes, and on the west by the steep descent to the Fleet; the site was, therefore, easily defensible. The river-face of the hills was, naturally, more abrupt than it is now, owing to the reclamation of ground from the river; the most ancient embankment lay 60 ft. north of the northern side of Thames Street.

The first definite evidence of a permanent settlement is the reference in Tacitus. The early Roman encampment lay east of the Walbrook, and the brick-earth on the west around St. Paul's was worked. Later the city expanded until the St. Paul's hill was included, the wall being built in the second half of the fourth century. The great Roman road from Kent (Watling Street) avoided London, and utilised the next ford upstream—at Westminster—on its way to Verulamium and the north-west. The earliest Westminster was a Roman settlement beside the ford, built on a small island of gravel and sand between two mouths of the Tyburn. This settlement could not grow, as did London, since the area of the island, known to the Saxons as Thorney, was small. The road from London to the west joined the St. Albans road at Hyde Park Corner, running along the "Strand," where the gravel came close to the river; a spring thrown out from this gravel by the London Clay was utilised for the Roman Bath in Strand Lane.

Throughout medieval times London was practically confined to the walled city, a defensible position being essential. The forests of the London-Clay belt on the north are indicated in Domesday Book and referred to by several writers, notably Fitzstephen, whose Chronicle also mentions many of the springs and wells and the marsh of Moorfields, produced largely by the damming of the Walbrook by the Wall. The same writer mentions that London and Westminster are "connected by a suburb." This was along the "Strand," and consisted first of great noblemen's houses facing the river and a row of cottages along the north side of the road; this link grew northwards, at first slowly, but in the second half of the seventeenth century with great rapidity. By the end of that period the whole of the area covered by the Middle-Terrace Gravel was built over, but the northern margin of the gravel was also that of the town for one hundred years, the London-Clay belt remaining unoccupied.

The reason for this arrested development was that the gravel provided the water-supply. In early days the City was dependent on many wells sunk through the gravel, some of which were famous, such as Clerkenwell, Holywell, and St. Clement's. In the same way the outlying hamlets (for instance, Putney, Roehampton, Clapham, Brixton, Ealing, Acton, Paddington, Kensington, Islington, etc.) started on the gravel, but later outgrew it. In the City the supply soon became inadequate, or, as Stow says, "decayed," and sundry means were adopted to supplement it. The conduit system, bringing water in pipes from distant springs, began in 1236; London Bridge Waterworks pumped water from the Thames by water-wheels from 1582 to 1817, while the New River was constructed in 1613, and is still in use. It was not until the nineteenth century that steam-pumps and iron pipes made it possible for the clay area to be occupied, thus linking together the various hamlets that now form the metropolitan boroughs of Greater London.

[1] From a lecture delivered before the Geological Society of London on February 1 by C. E. N. Bromehead.

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