

all belong to the genus *Anopheles*; and, finally, (4) Stephens and Christophers', and James's, fundamental rules: (a) some species only of the genus *Anopheles* are of practical importance in malaria transmission, and (b) each of them has its own preferential breeding places.

Malaria control, as an activity directed against mosquitoes, had taken no account of these rules, which I have called fundamental because they became, in Watson's hands, the basis of antilarval measures. Anti-mosquito work, in the early days, consisted of measures directed against the breeding places of mosquitoes, irrespective of their genus or species. As often as not more larvæ were killed belonging to the genera *Culex* or *Aedes* than to *Anopheles*. The waste of effort was compensated, to some extent, by the fact that the earlier successful campaigns were directed against urban malaria (Ismailia, Havana, Port Swettenham), with the advantage of the population to be protected living within a comparatively small area.

That was Watson's experience in Malaya. He had successfully dealt with the malaria epidemic in Port Swettenham, the newly opened maritime port of the rubber-growing districts, which threatened to become useless because of malaria. Watson saved it from being closed again; but he was at a loss how to act when he was requested to apply his method to the rural areas where rubber was grown, and where the labourers employed on the estates were seriously affected by endemic malaria. It was clearly impossible to remove, or to oil, all breeding places of mosquitoes in a large rural area, as had been done in a small urban area: the expense would have been prohibitive.

At this juncture Watson remembered the Stephens-Christophers-James rules, and the way they had been established. He applied his predecessors' method of research, which has become the pattern of the so-called malaria survey: the preliminary stage of every anti-malaria campaign. This survey includes two main sections. The first consists of three parts: (1) determining the distribution of malaria in the district; (2) collecting adult anopheles and identifying them, so as to be able to compile a list of the anopheline species of the district, and to establish the distribution of each one of these species; (3) comparing the data afforded by (1) and (2), in order to find out whether or not a correlation can be established between the distribution of malaria and of one of the local anopheline species. If such a correlation exists, the species involved is suspect of being the local vector of malaria. The second section of the survey consists of two parts: (1) determining the natural rate of infection with malaria parasites of each one of the local anopheles, in order to check the results obtained in the first section; (2) identifying the principal breeding places of each anopheline species. When the principal local vector has been identified in this way, and it has been proved, moreover, that this species has more or less specialized breeding habits, which induce it to select a certain type of breeding place in preference to all others, it becomes possible successfully to suppress the breeding of that one species, by dealing with its preferential breeding places, while leaving undisturbed all other collections of water, and the larvæ of the species breeding therein. This method of selective larval control, which since then has been called 'species sanitation', was first elaborated by Watson on the rubber estates in the flat swampy land of the coastal area of western Malaya, where *Anopheles umbrosus*

was proved to be the main vector, and next in the hilly country, where *Anopheles maculatus* takes over this function. It proved much less expensive than the indiscriminate larval control applied in cities, and so it rendered possible "rural sanitation in the tropics", the highly appropriate title selected by Watson for his first book.

Watson's method of species sanitation has conferred untold benefits on many countries to which it was applied, notably on the former Dutch East Indies (now Indonesia). So it is not inappropriate that the editors of *Nature* should have invited a Dutchman to pay posthumous homage to this benefactor of humanity.

N. H. SWELLENGREBEL

#### Dr. V. E. Nash-Williams

DR. V. E. NASH-WILLIAMS died suddenly at the age of fifty-eight on December 15. He had been keeper of archæology in the National Museum of Wales and lecturer in archæology (more recently head of the Department of Archæology) in the University College, Cardiff, since 1926. For those long years he had held two posts. The second, the teaching of archæology in the College, had, in recent years, expanded from a subsidiary to an honours course as a result of his work.

Dr. Nash-Williams's earliest excavations were a series made in the 'twenties and 'thirties on the Roman legionary fortress of Caerleon. Those which proved to be his last were on the civil settlement which he had long supposed to lie outside the fortress walls in an area still, by good fortune, not built over; the other legionary fortresses of Britain provide no similar opportunity. His suppositions were proved to be correct by his excavations of 1954 and 1955, excavations which he had hoped to continue for many years, for the area is a large one and the promises were good.

He had also conducted important excavations at the Roman town of Caerwent and on the Early Iron Age hill-forts at Llanmelin and Sudbrook in Monmouthshire, and on the monastic site and the Roman villa at Llantwit Major and the Roman auxiliary fort at Neath, in Glamorgan. The results of these and other works are to be found in publications of the National Museum of Wales, or in *Archæologia*, *Archæologia Cambrensis* and the *Bulletin of Celtic Studies*.

A field survey of the Roman military sites in Wales led in 1954 to his book "The Roman Frontier in Wales", an up-to-date review of the evidence of the Roman occupation, and a work now indispensable to any serious student of Roman Britain. A comprehensive inventory and survey of the more than four hundred early Christian crosses and monuments of Wales form the subject of his largest work, "The Early Christian Monuments of Wales", published in 1950. It is richly illustrated and does for Wales what Romilly Allen and Anderson's book did for Scotland. This work alone is a memorial of his industry and scholarship.

Dr. Nash-Williams believed that if archæology was to be a live subject, there must be active excavations on one hand, and on the other a continuous exposition of the results to the public. In this, as in other ways, his practice matched his principles. His untiring work in the field and in writing, teaching and lecturing caused his subject and his interests to be widely known, and they, and his personal qualities, made him greatly esteemed. He possessed humility

and a charm of manner and was a devout churchman. In each of the World Wars he served in the Army, in the first in the infantry and in the second in the R.A.S.C., from which he was seconded to the Historical Section (Military) War Cabinet Offices, for preparatory work on the official history of the War.

The archaeological world has lost a mature and industrious scholar and we in the National Museum of Wales mourn the loss of a distinguished colleague and a friend. The deepest sympathy is extended to his widow, his sons and his mother.

D. DILWYN JOHN

#### Mr. P. Y. Millns

PETER YORKE MILLNS, a brilliant research student of astronomy in the University of Manchester, lost his life on the Aletsch Glacier near the summit of the Jungfrau in the Swiss Alps on December 19.

Peter Millns, who was twenty-two years of age, graduated in physics in the University of Manchester with first-class honours in June 1954. He then joined the Department of Astronomy of the University to do research in nebular photography with high-speed Schmidt cameras in monochromatic light. With the help of Dr. A. Burawoy, of the College of Technology, Manchester, Millns developed in a short time an important application of dye filters for astronomical photography, and his first contribution to this subject was presented at the Manchester symposium on astronomical optics held last April. Quest for transparent skies led him repeatedly to Europe's highest observatory at Sphinx, Jungfrauoch (3,576 m.), and there he met his untimely end in a mountaineering accident during leisure-time. The accident has deprived science and the University of Manchester of a brilliant young scientist and a well-liked colleague.

ZDENĚK KOPAL

## NEWS and VIEWS

### Archæology of the Roman Empire at Oxford: Prof. I. A. Richmond, F.B.A.

NEXT October there will come into existence in the University of Oxford a chair in the archaeology of the Roman Empire, and Prof. I. A. Richmond, himself an Oxford graduate, has accepted an invitation to be its first occupant. Prof. Richmond, who is fifty-three, is at present professor of Roman-British history and archaeology at King's College, Newcastle upon Tyne, where he has been for the past twenty years. He is a leading authority on Roman Britain, and has excavated in many widely separated places in England and Scotland. Most recently he has been engaged with Dr. J. K. St. Joseph at Inchtuthil in work not yet finished which will give a complete picture of an unaltered Flavian legionary fortress, the general headquarters of the governor Agricola. Prof. Richmond early in his career, in 1930, produced the standard work on the City Wall of Imperial Rome. His most recent book is the masterly history of Roman Britain published last year by Penguin Books, Ltd., which ends with an admirable twelve-page bibliography. Prof. Richmond is a Fellow of the British Academy and an honorary graduate of the University of Edinburgh; in May he is to receive an honorary degree from the University of Leeds. In the University of Durham he has served with distinction as dean of the Faculty of Arts and as Public Orator. He is widely known as a skilful lecturer of exceptional clarity of speech. Joined to his patient devotion to study and investigation are a warmth of human sympathy and gaiety of heart which will endear him, as it has endeared him to his many friends at Newcastle and elsewhere, to the society of All Souls College, Oxford, of which he will be a Fellow when he takes up his new professorship next autumn.

### Nicholas Kulchitsky (1856-1925)

THE eminent histologist, Nicholas Kulchitsky, was born at Kronstadt a hundred years ago, on January 30, and it is almost exactly thirty-one years since he met with the accident in London that led to his death at the age of sixty-nine. Kulchitsky was appointed to the chair of histology at Kharkov in 1893, retiring from it in 1910 in order that the

younger members of his staff might have better opportunities for promotion. He held a number of appointments in Russia before the revolution of 1917, finally becoming Minister of Education. There followed a period of considerable hardship until he arrived in England in 1921. He joined the staff of the Anatomy Department at University College, London, on the invitation of Sir Grafton Elliot Smith, continuing to teach and to follow his research work until his death in 1925. Kulchitsky's scientific work extended over a wide field of histological investigation, ranging from studies on the intestinal epithelium to the comparative anatomy of nerve-endings in muscle. He will always be remembered for his discovery of the cells of the intestine that at one time carried his name. Nowadays these cells are known as argentaffin or enterochromaffin cells, and their function is still not clear. They have been thought to be neurosecretory or concerned with the absorption of vitamin B<sub>12</sub>; but many workers consider that Kulchitsky's own suggestion that they produce secretin may well be correct. He was an admirable technician, and his name is continually recalled to neurologists by his modification of the Weigert method that made possible the better staining of myelinated nerve fibres.

### Benjamin Franklin in Britain

BENJAMIN FRANKLIN made his first visit to London in 1724, when still an unknown lad. His second visit, lasting from 1757 until 1762, was made as a delegate of the General Assembly of Philadelphia, and during these five years he was in close touch with the Royal Society, of which he had been elected Fellow in 1756, and the newly founded Society of Arts (see also *Nature* of January 14, p. 60). When Prof. E. N. da C. Andrade delivered the Trueman Wood Memorial Lecture to the latter Society on January 18, he took as his subject "Benjamin Franklin in London". After giving a brief account of Franklin's early life, and his electrical experiments, Prof. Andrade turned to his visits to England, and described his close association with scientific circles in London during his second and third visits to England. The latter extended from 1764 until 1775. Over nearly two decades, Franklin was closely associated with the administration of