

his lips were again normal in colour, he reacted just like the other acclimatised subjects. We therefore concluded that active secretion of oxygen is an essential part of acclimatisation. Later experiments by Kellas, Kennaway, and myself in 1918 on acclimatisation in a steel chamber gave strong confirmation to this conclusion.

In the Peru expedition no experiments were made by the carbon monoxide method, but Prof. Barcroft and his associates made determinations of the percentage oxygen saturation of the arterial hæmoglobin. From the results of these analyses they drew the conclusion that the oxygen pressure of the arterial blood is never higher than that of the alveolar air. This conclusion, however, depended on a further conclusion that in all the subjects investigated the dissociation curve of the oxyhæmoglobin in the blood was greatly altered in such a way that the blood passing through the lungs would take up more oxygen than at sea-level. This result is in direct contradiction of careful experiments made previously by Barcroft himself on the Peak of Teneriffe and on Monte Rosa, and of particularly careful confirmatory experiments made by Douglas and myself on Pike's Peak, at practically the same height as in the Peru expedition. No explanation is given of the contradiction, and it seems quite incredible that a real difference could have existed. Until, at least, confirmatory evidence is forthcoming, I can only conclude

that there was some error of experiment in the Peru determinations. The analyses of the arterial blood gave just such results as we should have expected from the Pike's Peak experiments; and if, as I must still believe, the dissociation curves were practically the same as at sea-level, these blood-gas analyses prove, by themselves, our conclusion that oxygen secretion is an essential element in acclimatisation.

Prof. Barcroft unfortunately failed to understand the nature of our conclusions as to oxygen secretion, or the significance of previous work as to the relation between the mean alveolar oxygen pressure and the oxygen pressure of the mixed arterial blood. He has thus been unwittingly led, particularly in his recently published book on "The Respiratory Functions of the Blood," into a complete misrepresentation of my own views on the subject. On reviewing the whole of the existing evidence, including the very important data from the Everest expeditions, I can see no way of interpreting the phenomena of acclimatisation without the assumption of oxygen secretion in addition to the other known factors.

(The lecture contained a review of the evidence bearing on oxygen secretion by the lungs, since the time when its occurrence was first suggested by Ludwig; and at the end there was a discussion of the reason, now evident enough, why so little benefit was obtained in the last Everest expedition from the use of oxygen.)

Obituary.

PROF. EDOUARD NAVILLE.

THE late Prof. Edouard Naville, who died recently at Geneva in his eighty-third year, was a typical representative of the older generation of Egyptologists. The son of a distinguished Genevese family, of strong Evangelical tenets, he came to England when young to study at King's College, London, and here imbibed the liking for England and all things English that was characteristic of him through life. He went on to Bonn, and later studied Egyptology under Lepsius. He and Maspero both began their scientific work at the same time, round about the year 1870. In spite of great differences of temperament and style, their work shows resemblances characteristic of their time, especially in purely archæological matters; neither was able quite to enter into the spirit of the newer science of archæology or to understand its insistence on the importance of small things equally with great. The men of that generation thought only of great, beautiful, and fine things, and could see nothing of importance in a bead or a scarab. They were scholars and connoisseurs, not anthropologists.

Naville began to excavate in the early 'eighties for the Egypt Exploration Fund, shortly after its foundation (as also did Prof. Sir Flinders Petrie), and his work at Bubastis and at Deir el-bahri for the Fund will always be notable; that at Deir el-bahri being indeed among the most important excavations carried on by the Society. His work on the supposed site of Pithom and on the route of the Exodus was the most important, and in its time certainly interested a large body of subscribers. But his views on this subject are not now so generally accepted as they were then. The placing of the Exodus in the reign of Meneptah is

no longer regarded as a *chose jugée*, and Naville's views on the actual route of the Exodus have undergone some modification at the hands of younger scholars. For their time, however, his theories were very advanced, and of great importance. At Deir el-bahri he uncovered the great temple of Hatshepsut, and in later years (1903-7) that of Mentuhotep IV., this time assisted by the present writer, Mr. E. R. Ayrton, Mr. C. T. Currelly, and others. His earlier work had been done almost entirely alone, except that for one season at the Hatshepsut temple he had had the assistance of Mr. D. G. Hogarth. His plans and architectural descriptions were made for him chiefly by the late Mr. Somers Clarke, though in the Mentuhotep temple Mr. C. R. Peers and one of Naville's relations, M. Edmond Fatio, also helped.

Later on, Naville began the excavation of the Osireion, the great subterranean building behind the temple of Abydos, thought by him to be of the time of the Old Kingdom, but proved by his successor in the work, Mr. H. Frankfort, to be the funerary temple and cenotaph of Seti I. (XIXth Dynasty), thus confirming a surmise of Borchardt's published in *Klio* several years ago. This building was discovered by Sir Flinders Petrie and Miss M. A. Murray so long ago as 1902, but on account of the enormous labour and expense required for its excavation had been abandoned until Naville and the Exploration Fund took it up. Naville's work, in which he was assisted by Mr. T. E. (now Prof.) Peet and Mr. G. A. Wainwright, resulted in the clearance of practically the whole of this extraordinary building. Then the War came and closed down operations. Naville, after it, was too old to resume the work, which could not in any case be

begun until last year, when Mr. Frankfort carried it to its conclusion.

Naville's other scientific work related chiefly to the "Book of the Dead," of which he published the first critical edition. He was always specially interested in the religious side of Egyptian culture, and published a short work on "Egyptian Religion."

Naville was always proud of his knowledge of England, in the fortunes of which he took steady interest. In fact he was politically almost an Englishman, and showed his partiality by his impassioned defence of our action in the Boer War, when he published many pamphlets in all tongues in our favour, gaining rather an unenviable notoriety thereby on the Continent. He was a man of the courage of his opinions, and a keen polemic, as his attacks on "the Higher Criticism" of the Old Testament and his long disputes with the German Egyptologists on the question of the Semitic origin of the Egyptian language or the succession of the Thutmosids show; and in polemic he by no means always came off second-best.

Naville possessed many British and foreign degrees, was an Hon. F.S.A. and foreign associate of the Institute of France. During the War he was a prominent member of the Central Red Cross Committee at Geneva, over which he presided. No notice of him would be complete without a word regarding his devoted wife. Mme. Naville (*née* de Pourtalés) assisted him enormously in his work by copying descriptions, piecing together fragments of monuments, and so forth; her knowledge of Egyptology was considerable, and he always emphasised the value of her assistance to him in his scientific work.

H. R. HALL.

DR. FRANCIS WARNER.

THE passing of Francis Warner has removed one of the last of the group of physicians and physiologists who studied movements and gaits, attitudes and postures in the 'seventies of the last century. Much of the study was conducted by means of pneumatic tubes connected with Marey's recording tambours. This phase of Warner's work was set out in his well-known work, "Physical Expression," and in his Hunterian lectures to the Royal College of Surgeons. Modern electrical methods and cinematography have modified and extended the conclusions then reached. Warner's clinical observations on the postures and movements of nervous and defective children made at the East London Hospital for Children, and later supplemented at the London Hospital, still remain standards for all observers.

In the early days of compulsory elementary education, it was soon found that many children were unable to profit by the facilities offered; in some instances, such as those who were blind or deaf, the need for special schools was obvious and was soon supplied in gradually increasing measure, but in the case of others with mental or physical defects, public opinion was more slowly influenced. It is largely to Dr. Warner's efforts in investigating the conditions of some 10,000 children in the London elementary schools and to his labours on a series of commissions that the present provision in London, unequalled anywhere in the world, came into being. Warner made a great point of observing the

child at rest and while performing certain very simple movements, such as looking at an object or holding the hands straight in front of the body with the palms down. He directed attention to slack or convulsive postures of the hand which indicated nervous instability, to the knitting of the eyebrows, which might indicate nervous strain or hypermetropia, to muscular overaction of various kinds.

For some years Warner's tests formed a large part of the examination of children suspected of needing special education, and though they have been supplemented and in part replaced by tests of the Binet-Simon pattern, and other tests of power of performance and of adapting thought and movement to new requirements, they are still an essential item of a complete examination. Above all things, Warner stressed the point that an examination should be dynamic rather than static, that evidences of defect as shown by stigmata, then popular as supposed indices of mental status, were as nothing compared to that derived from actual movements and performances.

Dr. Warner was one of the first of a series of school hygienists and child students, who did much himself and, by his example and ready help and advice, laid the foundations of the present system of care for the health of scholars and the comfort and sanitation in the broadest sense of our schools.

PROF. CARLOS SPEGAZZINI died on July 1 of this year. He was born on April 20, 1858, at Bairo, Italy, and was a pupil of the late P. A. Saccardo at Padua. In 1878 he contributed his first paper on mycology, a study of coprophilous fungi, to the short-lived periodical *Michelia*, which Saccardo edited. He published a series of notes on the diseases of the vine and began to issue fascicles of dried specimens ("Decades mycologicae Italicæ"). In 1880 he went to the Argentine as professor of natural history at Buenos Aires. The number of fungi recorded for the Argentine was then thirty-nine. Spegazzini worked this virgin soil to the full, and until his death made continuous contributions to the mycological flora, extending his investigations to most countries of South America. His work was that of a general systematist, and in the thousand or so new species he described, practically all groups are represented. His work appears to be much more carefully done than is usual in such mass production, and is illustrated by clear and attractive drawings. Spegazzini not only accomplished an enormous amount of mycological work but also published numerous papers on Phanerogams, specialising during the last few years more particularly on Leguminosæ. Odd papers on all sorts of subjects testify to his great interest in general natural history and science.

WE regret to announce the following deaths:

Sir Edward Busk, sometime Vice-Chancellor and Chairman of Convocation of the University of London, and a member of the governing bodies of the Imperial College of Science and Technology and of several well-known schools, on October 29, aged eighty-two years.

Mr. R. N. Lennox, formerly assistant to the late Sir James Dewar at the Royal Institution, on November 1.