

and the figures which we quote below show how unlikely we are to get such a system under the scheme now put forward, if it be admitted, to adopt a statement taken from the report of the same committee, that experimental science, *i.e.* chemistry and physics treated experimentally, is an essential part of a sound general education. In the outlined scheme now before us—as stated above—science comes into the education of the candidates in the qualifying part as an alternative for Latin or Greek, that is to say, practically speaking, for Latin: and again in the competitive part as an alternative for Latin, French, history, &c. Now boys at school begin Latin at say eight or nine years of age. They probably rarely begin the experimental science proposed before thirteen or fourteen. If the candidates are to do a three years' course in chemistry and physics, as suggested, they must begin it at fourteen or sooner, in order to be ready for the qualifying part at, say, seventeen, which seems likely to be about the age at which we may expect most candidates will take this part. This means that at about fourteen the choice must be made between science and Latin.

But at fourteen a candidate will have studied Latin, French, &c., for years. He, his masters and his parents will know a good deal about his prospects in these subjects. Whilst, from what we have said, it is obvious that in most cases they will know nothing about his prospects in science at that age. Can it be doubted that nearly all the cleverer boys, and most even of those whose abilities are second rate, will neglect science at every stage—that, as a rule, only those who are really bad at Latin will get any science? Again, is it reasonable to suppose that candidates whose early education has included no experimental science will at the eleventh hour give up one of the subjects in which they are somewhat advanced, and take to a subject in which they are untried and untrained? Must it not happen that the average officer of the future will know nothing of, and care nothing for, science or its methods, be incapable of appreciating its importance to his profession, and incapable, even, of using the knowledge of others from ignorance of their language and methods of thought? This scheme must result most disastrously in its effect on the army and on the schools.

It has been suggested that the parents will select and insist on the science. We do not believe it. There is a strongly flowing current in favour of science among the parents. That is true. But how can any reasonable parent be expected to insist on his son taking up the subject which seems least likely to conduce to success in a competition of vital importance to him?

But this question is not really a matter of opinion at all.

Some years ago science, in both Woolwich and Sandhurst competitions, had to compete in a somewhat similar way with several other subjects which are begun earlier than the experimental science at schools, and on conditions which were, we think, not so very much more unfavourable than those now proposed. From computations that have been made for us, we find that at that time one successful Sandhurst candidate in twelve ventured to offer experimental science. For Woolwich, even, though there were well-known advantages in starting at the Royal Military Academy with a scientific training, which no doubt will still exist, the proportion who offered science was only 22 per cent., or say one in five, of the whole.

As the majority of the candidates will continue for some time to come to be derived from the same classes as in the past, why should we expect a more favourable result now? Some years ago Sir Henry Roscoe

and others came forward as the champions of science, and, aided by the head masters of Rugby, Cheltenham, Clifton, and other schools, and by insistently directing attention to these and similar facts, presently secured a more reasonable system in many respects. No doubt the science arrangements made then need revision now in many of their details. But the need for science training among our officers, the need for a fuller appreciation among them of the part it plays, the absolute need to start a training in science, as in languages and mathematics, at an early stage of a boy's training; and, above all, the importance of not teaching young officers to regard it as unimportant by neglecting it at the schools or afterwards, were never greater than at this moment. Who among our leaders in science will come forward in this fresh emergency?

#### PROF. ALEXANDER ROLLETT.

PROF. ALEXANDER ROLLETT, of the University of Graz, the eminent physiologist, died on October 1 at the age of sixty-nine. His name, though not associated with any particularly brilliant discovery, is well known to science as that of a diligent and successful worker.

Descended from a family of doctors, both his father and grandfather having been more or less distinguished physicians in Baden, near Vienna, Alexander Rollett commenced his medical studies in the dawn of the great era of physiological science under the guidance of Carl Ludwig and of Ernst Brücke, then newly appointed professor of physiology in Vienna.

In 1858, having completed his course of studies, Rollett became Brücke's assistant, and in 1863 was appointed to the professorship in Graz, which he retained until his death. Like his great masters, Rollett's investigations extended to widely different subjects, but by preference to problems that involve the use of histological methods. His principal researches may be summed up under no less than four distinct headings:—chemistry and histology of connective tissue, chemistry and histology of blood, histology and physiology of muscle, and work on sight and other senses. Three of these different subjects Rollett subsequently treated at length in several standard publications.

We find Rollett first studying the composition and structure of the connective tissues, and demonstrating that mucine is a prime constituent of these substances. His work on this subject, and especially on the cornea, he later on embodied in the corresponding chapters of Stricker's "Handbuch der Gewebelehre." He then turned his attention to the chemical and histological properties of the blood, and it was he that first performed the well-known experiment of "laking" blood by alternate freezing and thawing, and by repeated discharges of electricity. The theory of the "stroma" of the red corpuscles is likewise founded largely on Rollett's observations. By these and other discoveries he attained the rank of a prime authority on the physiology of blood, so that when Hermann edited his well-known "Handbuch," the chapter on blood fell to Rollett's share.

On the intricate subject of the structure of striated muscle Rollett brought to bear his powers of histological analysis, and added new comparative data of value by his observations on the muscles of bats, of insects, and of other invertebrates. At a much later period Rollett again approached the study of muscle from a physiological point of view, and published important observations on the velocity of the contraction wave and on exhaustion phenomena. On the

histology and physiology of muscle generally Rollett wrote in Eulenburg's "Encyclopædie." To physiological optics he contributed several papers on spatial perception, on contrast, on the effect of plane parallel glass plates, and various other subjects. He was also one of the first discoverers of sense organs in tendons, and published various observations on the sense of taste, of smell, and on cutaneous sensations.

That Rollett was no less of a teacher than of an observer is proved by the success of many of his pupils. The University of Graz acknowledged his merit by choosing him for rector no less than four different years, including the year of inauguration of the new buildings, when the Emperor and other illustrious guests were to be received. Rollett was also frequently elected as a representative on the local board, and the organisation of the new physiological institute, built under his supervision, testifies to his practical ability.

Most scientific men are naturally diffident to commit themselves in writing to a verdict on the merit of a fellow worker, but it is a curious fact that in verbal conversation this diffidence does not appear. The mere way in which the name of an observer is mentioned is often equivalent to a fairly strong expression of opinion. A careful and conscientious observer commands a degree of admiration and reverence that affects the tone of every chance remark. Judged by this standard, Alexander Rollett was a true follower of science.

R. DU BOIS-REYMOND.

#### NOTES.

A RUMOUR has reached us that at the annual meeting of the Royal Society on Monday next an attempt is to be made by a certain section of the fellows to upset the selection of officers made last week by the council. It appears that the physiologists are under the belief that they have acquired a prescriptive right to hold one of the two secretaryships. It is true that for upwards of forty years they have so held it, but the group of natural sciences includes more than physiology or even biology, and the council, in the exercise of its discretion, has thought that it was high time that one of the other sciences should be represented in this secretaryship. We are further informed that a copy of a letter is being circulated which appears to convey an invitation from the president and council to a certain physiologist to accept the vacant office. That letter was, it is stated, written in error, without the sanction or knowledge of the president and council, but in view of it a special meeting was called to consider the matter, when the council decided to adhere to the decision at which they had already arrived in the ordinary and regular way—a decision which is obviously in the best interests of the Royal Society as a whole, and doubtless the great majority of the fellows will support it by their votes on Monday.

A CORRESPONDENT of the *Times* directs attention to the wise recognition given to science and other branches of learning by Continental nations on all occasions of national importance; and the comparison he makes with our own official customs is not creditable to our dignity. When a monarch or the supreme authority of a State visits the Court of another nation, men of "light and leading" are usually invited as guests to meet him. These are the men who give distinction to a nation; and a people which fosters intellectual accomplishments cannot conceive a State function in which they are not represented. Here, however, there is little pride in the glory which learning brings to a State, and little encouragement is given to the men who devote themselves to the advance of knowledge. Not

a single writer, painter, sculptor, architect, musician or man of science of distinguished eminence was invited to Windsor or to the Guildhall to meet the King and Queen of Italy during the recent visit; and the omission, inconceivable to a foreigner, is characteristic of our customs. The *Times* correspondent concludes his letter with the following remark, with which we are entirely in sympathy:—"I believe I shall be expressing the opinion of many of my countrymen if I say that it is much to be regretted that, on great national occasions, persons of titular rank, of great wealth, or of political prominence should be considered adequately representative of the Realm, and that the arts and sciences should be ignored, as though they were non-existent among us."

SINCE the termination of the Bayliss *versus* Coleridge case, which is discussed in another part of this issue, two further communications, which appear to us as striking confirmation of the views expressed in our article, have been received by the daily papers; they are:—(1) a letter from Mr. Coleridge in which he announces that he has paid the damages (which would be interesting, had it been optional) and that he intends to continue on his former courses; (2) a letter from Mr. Bayliss, from which we learn that the large sum which he might, after having personally borne the expense and long months of worry, have used, with perfect justice, for his own advantage, has been devoted by him to the furtherance of that branch of physical science which was the object of the recent attack. Mr. Bayliss's employment of this money as a public trust is in complete consonance with the sense of public duty which has actuated his conduct throughout this matter. It will be endorsed by English physiologists and by the public as forming a worthy and fitting termination to the struggle which has been followed with so widespread an interest.

A REUTER message from Buenos Ayres announces that the Argentine war vessel *Uruguay* has arrived at Rio Gallegos with the members of the Nordenskjöld Antarctic Expedition on board. Two of the missing Swedish explorers were found on Seymour Island on November 8, and others at Snow Hill. The *Uruguay* then proceeded to Paulete Island, where the main body had wintered, and took the remaining members of the expedition on board. Dr. Nordenskjöld's expedition left Falmouth in the steam yacht *Antarctic* in October, 1901, and he expected to be home again early in the present year. From the outset of the voyage the expedition met with countless difficulties owing to the state of the ice. In December, 1902, the vessel reached the north-east coast of Louis Philippe Land, where Dr. Nordenskjöld, Lieutenant Anderson, and two sailors were left at Mount Bransfield. Dr. Nordenskjöld proposed to proceed to Snow Hill in sledges. It was arranged that Mount Bransfield should be the rendezvous for the whole expedition. The *Antarctic* meanwhile made her way to the east of Joinville Island and entered Erebus and Terror Bay. There she was caught in the ice, which finally crushed and sank her. Captain Larsen succeeded in saving all on board, and the party took to three of the ship's boats, which they equipped with provisions. They drifted about for sixteen days, and finally reached Paulete Island, where they established their winter quarters. In September, 1902, Dr. Nordenskjöld, accompanied by Lieutenant Sobral and one sailor, made a sledge journey with two sledges and five dogs in a south-westerly direction. Travelling by way of King Oscar Land, a latitude of 66 degrees was reached, the longitude being 62 degrees west. The party returned to Snow Hill at the beginning