

other side, if it is argued that this infiltration, as it is called, of boys of one class into schools up to now reserved for boys of other classes, will have the effect of de-classing them, as it were, and detaching them from their former political and social allegiance, that also has no validity. Both are good examples of the wrong kind of approach. The only sensible and natural approach is surely this: Are there any parents who want their children to have boarding school education? If so, is it fair or right that they should be debarred from obtaining that education for their children because they cannot afford to pay the fees? Clearly the answer to this second question must be: No. If the public schools have worked out an educational method and standard that parents believe to be valuable, ought access to those schools to be confined, as it is now, to exceptionally clever boys who win scholarships, and boys whose parents can afford to pay high fees? Clearly, again, the answer must be: No. How, then, can we put matters right? I suggest by the adoption of a double-pronged policy; first that the State should provide boarding schools of its own, and power to do this is conferred upon the State by the Act; and secondly, that the existing boarding schools should take post side-by-side with these schools that soon, we hope, will be created, making their contribution under proper conditions, but preserving their independence. This policy will give rein to the incontestable right of parents to decide within reasonable limits how their children shall be educated; and it will at the same time enable the public schools to make their offer without forfeiting their independence.

It may be asserted, in reply: Why should the schools be allowed to retain their independence? On that the schools are unanimous and emphatic. It is not in the public interest that all schools of every kind should be controlled by the State, and this principle is conceded by Parliament in the Act. It is not the business of the State to control all education because it is the State; but rather to encourage good work wherever it is being done, and to supplement the existing provision where the latter cannot cover the ground. Spiritual and intellectual liberties of the highest significance for the welfare of Britain are involved in this; and it is probable that if, as a condition of participating in this or any other scheme, the schools are asked to surrender their independence, they will have nothing further to do with the matter. They would, I believe, be unanimous in welcoming, as they are now under the Act required to accept, inspection by the Ministry, and personally I can see no objection to the inclusion of public representatives in the proportion suggested on the governing bodies. There, however, external supervision should stop.

There are a large number of details that will have to be worked out and which cannot, owing to limitations of space, be set out in this article—for example, the age of entry, methods of selection, the preparatory stage, assessment of parental and other contributions, agreement upon the standard fee, etc. Two general considerations can be urged at this stage. First, the schools are at present crowded to overflowing, the public demand for them is great; and it may therefore take some time for them to work up to the full 25 per cent, if that recommendation should be accepted. Secondly, the report makes a fine offer to boys who have been previously educated at primary schools, and we may hope that nobody will seek to encroach upon or limit that offer to those

boys. But it remains true that very little is offered to parents in straitened circumstances, poor professional men, who have not sent their children to primary schools. In the interests of justice and equality it is clear that later on, if not now, measures will have to be taken to open the door to the children of these parents also.

During the last six years many pages have been written on the public schools, some of the authors being inspired by an irrational adulation of everything they do, and others by an equally irrational detestation of them and all their works. It may be hoped that during the months that are approaching all that sort of nonsense may be forgotten. The plain fact is that the schools have something to offer; and the plain question is, How can that be made use of in the interests of the nation as a whole? The latest volume on the public schools is called "The Public Schools and the Nation", by Dr. A. B. Badger*. This is based on some careful research going back to the sixteenth century. The general tone of the book is critical, and no one who values the contribution made in the past, and to be made in the future, by the public schools will ever object to having their faults candidly pointed out. The general effect of the book is somewhat confusing, as it consists so largely of quotations from the opinions of other people, many of them expressed a number of years ago, and applying, therefore, to conditions which have long since ceased to exist in the schools. Readers will welcome Dr. Badger's compilation and be grateful to him for his research; but the best of all guidance to future policy is to be found in personal, up-to-date, first-hand acquaintance with what the schools are and what they try

* The Public Schools and the Nation. By Dr. Alfred B. Badger. Pp. 160. (London: Robert Hale, Ltd., 1944.) 8s. 6d. net.

OBITUARIES

Sir Duncan Wilson, C.V.O., C.B.E.

SIR DUNCAN WILSON who, until his resignation in 1940 was chief inspector of factories, died suddenly on March 2 in his seventieth year. On leaving Eton he entered Magdalen College, Oxford, where he took his degree with first-class honours in natural science, and although his life-work has mainly been in administration, yet his scientific training proved a very valuable asset.

His official career falls roughly into three main periods. For fourteen years from 1904 he was a factory inspector; then came twelve years in which, as secretary, he organized the Industrial Fatigue (later Health) Research Board; after which he returned to his old department, first as deputy and then as chief inspector of factories.

Perhaps the mid-period gave Sir Duncan the greatest opportunity to use his scientific knowledge and to express his individuality. The Industrial Fatigue Research Board was a very small organization, formed at the dissolution of the Health of Munition Workers' Committee at the end of the War of 1914-18, to apply the principles of physiology and psychology to research into industrial problems. In his first annual report published in 1920 he wrote, "The scientific study of the laws governing the healthy employment of the human mind and body in industry was strangely late in its development in this country,

although it was in Great Britain that the industrial revolution had its first beginnings and industrial development was most rapid". In his next report he introduced the same theme, "Industries for the most part are not yet fully alive to the importance of the human factor in production and to the still greater part this is destined to play in the future". It is partly due to the early work of Sir Duncan that these words are less true now.

In his early organization each investigator was responsible for a particular industry, and the investigators concerned themselves principally with hours of labour and the general environmental conditions likely to cause undue fatigue. As time went on investigators developed individual interests and worked along more specialized lines. As an organizer, Sir Duncan interfered as little as possible with his staff, although he was always willing to help where help was needed, either in making arrangements with a particular firm, or advising on the form of a report; and no small part of the work of the Industrial Health Research Board has been made possible by his unobtrusive but valuable help. By 1930 there had been published fifty-six reports dealing with hours of labour, lighting, heating and ventilation, vocational guidance, boredom, accidents, time and motion study.

There was an entire absence of 'red tape' in his dealings with his staff, and all, however junior, could have access to him. He had a remarkable poise of personality which made him at home with people of all ages and social class. He could without conscious effort talk equally easily to a factory worker or a duchess, to an industrial magnate or a humble apprentice, and to go round a factory with him was invariably a valuable experience. He was unusually scrupulous in giving credit to researchers and in acknowledging their work. He had many interests outside his work and was an excellent amateur musician.

Sir Duncan's official retirement was in name only, for he carried on numerous activities after the outbreak of war, serving as chairman of the National Industrial Electric Lighting Service and of the Home Office Committee on Factory Lighting, a subject that had always been of great interest to him. He will, however, always be affectionately remembered by his colleagues for his humanity.

Prof. Paul Bertrand

SON of the distinguished palaeobotanist Charles Eugène Bertrand (1851-1917), Paul Bertrand, the report of whose death has recently reached Great Britain, followed up his father's work on fossil plants, and became a leader in palaeobotanical research. He was professor of palaeobotany in Lille until 1938, when he was appointed to the chair of comparative anatomy for the study of fossil plants at Paris. He died in Paris after a short illness aggravated by privation and anxiety on February 24, 1944.

Most of Bertrand's published work falls within the period 1910-39. His most important contributions to the literature of his subject fall into two groups. His work on the Carboniferous floras of the French coal-measures has proved indispensable to students of Carboniferous stratigraphy in Europe and America. His recognition and demonstration of stages or zones in the succession of vegetation in the Carboniferous which could be recognized and defined by their floristic composition will remain, just as the corre-

sponding work by Kidston in Britain, a classic example of the application of palaeobotanical research to geology. Their work has led up to more recent work by Dr. Dix in South Wales and by many workers in North America. As an accompaniment to this work he produced monographs of outstanding quality on the Pteridosperm genera *Alethopteris*, *Mariopteris* and *Neuropteris*.

The essence of all this research is contained in Bertrand's contributions to the *Comptes rendus* of the Congresses on Carboniferous Stratigraphy held in Heerlen in Holland in 1927 and 1935. On the botanical side, his work on Algæ (Botryococcaceæ) found as constituents of certain coals, and on the anatomy of Devonian and Carboniferous ferns, is of outstanding quality and importance. Here he ranks with Williamson, Scott, Kidston and Lang as an outstanding contributor to our knowledge of the anatomy of Devonian and Carboniferous plants.

Bertrand kept in touch with a wide circle of friends interested in palaeobotanical work, and, with Mme. Bertrand, who survives him, regularly attended international meetings. Those who were privileged to know him will remember his quiet unassuming character, and his unfailing sympathy and interest in his friends' difficulties and problems. To know the Bertrands was to know what is best and most charming in the French character. His death causes an irreparable loss to many—especially to his younger colleagues, to whom he was unfailingly helpful.

JOHN WALTON.

Dr. Max Bergmann

DR. MAX BERGMANN, the distinguished chemist, died in New York on November 7, 1944, at the age of fifty-eight. Dr. Bergmann, who was born in Fuerth, Bavaria, studied chemistry in Munich and received his Ph.D. degree in the University of Berlin in 1911. He then entered the laboratory of Emil Fischer, where he worked until the latter's death in 1919. In 1921 Bergmann became director of the Kaiser Wilhelm Institute for Leather Research in Dresden, a position which he held until 1934. Shortly after Hitler came to power, Bergmann, being a Jew, resigned his post and accepted the position of an associate member of the Rockefeller Institute for Medical Research in New York. He was appointed a member of the Institute in 1937 and occupied this position at the time of his death.

Bergmann's work up to the time when he left Germany followed fairly closely both in subject-matter and in his way of approach that of his great master, Emil Fischer. It was concerned, almost exclusively, with the organic chemistry of amino-acids and carbohydrates. Fischer had discovered a new class of sugar derivatives, the glycals, but Bergmann proved that the structure assigned to them was not correct. He showed that these compounds were not aldehydes as Fischer had assumed, and also demonstrated the presence and position of a double bond and established the size of the ring. Another field of sugar chemistry in which Bergmann made notable contributions was that of chitin and glucosamine. His isolation of the disaccharide, chitobiose, was contemporary with that of Zechmeister.

The main interest of Bergmann was, however, in amino-acids. He extended greatly our knowledge of the azlactones, the highly reactive unsaturated anhydrides formed from amino-acids; his last paper, which appeared after his death, was devoted to this