Pharmacology and Therapeutics of the Royal Society of Medicine, and, in 1929, he was president of Section I (Physiology) at the Cape Town meeting of the British Association.

Dixon possessed the faculty of explaining the most difficult problem in the simplest possible way. He was a fluent and ready speaker, and was often requested to lecture upon both scientific and semi-popular subjects. His addresses upon "Tobacco" and the "Cocktail Habit" are examples of his powers in this direction.

It is impossible to enumerate all Dixon's interests and activities. He possessed a buoyant, kindly nature; he was always cheerful, always full of life and energy. He had a host of friends, and it has been remarked, with truth, that he never said an unkind word. The day before his death, he was, as usual, in his laboratory planning future work and apparently in normal health, while those with whom he was in daily contact little thought that this was the last occasion upon which they would enjoy his confidence. He died, as he would have wished, in harness; and pharmacology has sustained its greatest loss since the death of Schmiedeberg.

F. B. P.

PROF. J. W. HINCHLEY.

JOHN WILLIAM HINCHLEY was born at Grantham in 1871, but at an early age was resident in Lincoln, and was a pupil at the Grammar School. He obtained valuable experience as an engineer with Ruston, Proctor and Co. and with the Reliance Ironworks at Lincoln. In 1893, Hinchley gained a National Scholarship and became a student at the Royal College of Science and Royal School of Mines, South Kensington. Here his career was brilliant, and he obtained a Whitworth Exhibition (1894) and later a Whitworth Scholarship (1896), but he did not avail himself of this. Whilst a student, those keen interests, which he maintained throughout his life, in all that would help his fellows were evidenced by his activities in the Students' Union, on the committee of the old students' rooms—indeed a dreary place compared with the premises of to-day—and the debating society.

Hinchley took a first class Associateship of the Royal School of Mines, and after a short time as junior demonstrator went to Dublin, where he was engaged under Prof. Joly in perfecting Joly's three-colour photographic process. Here Hinchley gained very valuable mechanical experience in working out the intricate details of ruling the colour screens used. Returning to London, he was for a time with the late Mr. Oscar Guttman. This was followed by a residence of some years in Bangkok as technical head of the newly established Siamese Mint. This period abroad, in a climate which did not suit him, undermined his health for some time.

On his return to England, Hinchley took up consulting work, and about this time developed his ideas of the association of the chemist and engineer in the individual as a 'chemical engineer', an association which has been much criticised, but which has won through, thanks largely to Hinchley. He was mainly instrumental in the formation of

the Chemical Engineering Group of the Society of Chemical Industry and was its first chairman, and also in the formation of the Institution of Chemical Engineers, from the inception of which he was honorary secretary. Hinchley first lectured at the Battersea Polytechnic and later at the Imperial College of Science and Technology, where he was appointed as the first professor of chemical engineering.

On his return to South Kensington, Hinchley at once threw himself into the social life of the College, and was particularly interested in the new Students' Union, with its many amenities. He also took a very active part in the affairs of the Old Students' Association.

Hinchley became a freemason whilst in Siam and took a great interest in masonry on his return. He was largely instrumental in the formation of the Imperial College Lodge, of which he was a past-master, and took an active part in the formation of the Radium Lodge.

As a teacher of chemical engineering, Hinchley had exceptional qualifications by reason of his very practical engineering experience, combined with an extensive knowledge of chemistry and mathematics. Not only had he the requisite qualifications, but he also had the gift of getting the best out of his students. As Prof. H. E. Armstrong wrote in an appreciation in the *Times*, "he treated the subject with a common sense, a breadth of outlook, and in a practical way which made his pupils of altogether special value in industry".

All those who were privileged to know Hinchley intimately will always remember him as one whose greatest pleasure was to be doing something for others. It was the key-note of his life. Give him some project to organise which would be helpful to others and he never spared himself. His many friends were deeply distressed by the several weeks of suffering which he patiently endured before the end in the Freemasons' Hospital on August 13.

J. S. S. B.

GROUP-CAPT. MARTIN FLACK, C.B.E.

To Martin Flack, whose death at the age of forty-nine years occurred on Aug. 16, we are indebted for the clear setting out during the War of those principles which made high flying possible by the use of oxygen breathing apparatus, and for the tests which differentiated suitable from unsuitable candidates for flying. Moreover, he did excellent work in recommending the physical training required to make and keep those chosen for the air service in fit condition. In addition, at the time when cerebro-spinal fever caused great anxiety, he did first-class work in elucidating the means, by ventilation, spacing out beds, etc., of keeping down infection and for carrying out serum treatment.

Flack raised himself by his native genius and sterling character from the elementary school to the University of Oxford, and kept himself by scholarships up to the taking of his medical degrees. Then, beginning research with Sir Arthur Keith, he discovered anatomically the sinu-auricular node, and was first to prove by experiments on the living

heart that this is the pace-maker of the heart—a most notable discovery. Next, working with me as demonstrator of physiology at the London Hospital Medical School, he proved himself to be a splendid teacher, and was enthusiastic in showing to his class experiments which the student usually has no opportunity of seeing, such as those fundamental ones by which Harvey proved the circulation of the blood.

Flack and I together carried out researches on the influence of breathing excess of carbon dioxide and deficiency of oxygen, and on the increased power to do work which the breathing of oxygen gave. We showed that runners, boxers, and swimmers were improved in performance by breathing oxygen.

This work enabled Flack, when the need suddenly arose, to design the means for overcoming the failure of war-pilots to fly at high altitudes. Oxygen breathing apparatus was supplied and perfected so that flying became possible at extreme heights. Flack tested himself in a chamber at a pressure equal to a height of well over 40,000 feet—a very courageous performance. He also contrived the tests for pilots who had crashed, which showed whether their nervous system had become stable or was still unfit for flying. One of these tests was the ability to hold the breath long and the effect of this on the blood pressure, another the power to raise a column of mercury 40 mm. high and hold it by the breath as long as possible. He was able to classify pilots as good or bad, without knowing their records for crashing, and his classification agreed with the records. By the tests which Flack introduced, the efficiency of the air service was very greatly increased, and for this Great Britain owes him a great debt of gratitude.

Flack was troubled by a rheumatic heart, but, in spite of this, was a most cheery, humorous, and energetic man, and no one could be a better colleague than he. His far too early death will be lamented by many friends, and by the Air Service in particular.

LEONARD HILL.

MR. DAVID DAVIES.

By the death, on Aug 15, of David Davies, of Gylfach Goch, Wales has lost one of her most industrious students, and the science of palaeobotany an interesting personality.

Born near Merthyr Tydfil, sixty-one years ago, Davies began his working life as a 'door boy' in a local colliery, and as soon as he was old enough became a collier. He had a passion for knowledge, especially that relating to the rocks among which he worked, and took advantage of the evening class facilities then available in the Rhondda Valley, with the result that, after passing through the various grades of colliery official, he became, while still a comparatively young man, agent to the Britannic group of collieries of the Cambrian Combine.

The interest in fossil plants that, in his boyhood days, gained for him the nickname "Dafydd Ffossil", was maintained as he grew to manhood, and, encouraged by well-known palaeobotanists,

he began to collect systematically from each of the separate horizons at which fossil plants occurred in the eastern part of Glamorgan. His object was to record not merely the kinds of plants that were present, but also the associations of plants and the relative abundance of each species, genus, and class of plants, and thus to lay the foundations of an ecological study of the successive 'coal-forests' that occupied the site of the South Wales coalfield.

The results of Davies's work have been published in the *Quarterly Journal of the Geological Society*, the *Transactions of the Royal Society*, and other journals, and at the time of his death, which occurred suddenly while on holiday in Norway, he was nearing the completion of a series of parallel investigations in the more westerly regions of the coalfield. During the course of such intensive collecting, he got together a very large series of coal-measure fossils, the majority of which he presented to the National Museum of Wales for the use of future students: the remainder passed into the hands of the late Dr. Kidston, and are now in the collections of the Geological Survey.

It is a matter for regret that Davies did not live to complete the work upon which he had been engaged for nearly forty years, but his manuscripts have been so carefully arranged that the essential parts of his conclusions can still be published; and the 'David Davies' collection in the National Museum of Wales, probably the largest collection from any one coalfield in the world, is a permanent memorial to his industry and devotion to science. Some years ago his work was recognised by the University of Wales and the degree of M.Sc. conferred upon Davies, and he has served for a long period upon the Council and upon the Court of Governors of the National Museum of Wales.

David Davies did not allow his interest in science to interfere with the discharge of his official duties, and he had the satisfaction of seeing a colliery district that was threatening to become derelict when he assumed charge, in 1911, enter upon a new phase of activity, resulting in the growth of Gylfach Goch from a village of some two thousand inhabitants to a community five times as large.

F. J. N.

DR. W. E. DOWNEY.

By the death of W. E. Downey, as a result of an accident on Aug. 19 while climbing the Jungfrau, the Research Laboratories of the G.E.C. lose a brilliant worker of outstanding promise; the staff of the Laboratories lose a colleague of unusually charming personality.

Downey entered the Wembley Laboratories five years ago, and his first task was the extremely difficult one of investigating the manufacture of carbon black, with a view to putting it on a more rational basis. To this he brought a combination of scientific ability and technical insight which enabled him to apply scientific principles, so far as that can be done, to what is inevitably a very empirical process. Later, he had an opportunity of applying the same qualities to other problems,