

Obituary Notices

Prof. J. J. Abel, For. Mem. R.S.

NEWS of the death of John Jacob Abel on May 26 last was received with the deepest regret by pharmacologists all over the world as well as by a much wider circle of those who knew the man himself and could assess the value of his work and influence in advancing medical knowledge generally. He was one of the few surviving links with the beginnings of pharmacology as a separate discipline.

Abel was born at Cleveland, Ohio, on May 19, 1857, and entered the University of Michigan at nineteen years of age. He obtained the degree of Ph.B. there in 1883, after which he spent a year in graduate study at Johns Hopkins University. In 1884-88 he studied chemistry, physiology, pharmacology and medicine in various universities in Germany, and in 1888 took the degree of M.D. of the University of Strasburg. He spent a further two years in Vienna and Berne, and in 1891 returned to America as professor of materia medica in the University of Michigan. Two years later he became the first professor of pharmacology in Johns Hopkins University, a position which he held with so much distinction until his retirement in 1932.

The first Institute specially devoted to pharmacology was founded at Dorpat in 1847 by Rudolph Bucheim. Bucheim was succeeded at Dorpat by his assistant Oscar Schmiedeberg who, in 1873, was called to the University of Strasburg, and there established an Institute of Pharmacology, which soon attracted workers from all parts of the world. Abel was one of these, and he had thus, through Schmiedeberg, connexions with the beginning of pharmacological laboratories. When new positions in pharmacology were first created, most of those who were called to fill them had worked in Schmiedeberg's laboratory, and Abel from his work in this and other European universities came to have a personal knowledge of those men who afterwards became the pioneers of pharmacology throughout the world. Another of Schmiedeberg's pupils, A. R. Cushny, was selected by Abel to succeed him at the University of Michigan, and these two men exercised a guiding influence upon the development of pharmacology in the United States.

In 1909, Abel founded the *Journal of Pharmacology and Experimental Therapeutics*, which was the first pharmacological journal published in English, and in the editorship of which he was later joined by Cushny. The journal is now the organ of publication for both the American and British Pharmacological Societies. In all that concerned the early development of pharmacology in English-speaking countries—in the establishment of new laboratories, in the selection and training of young men to fill newly created positions and in providing a channel for the publication of their researches—Abel played a dominant part.

This influence, however opportune and important

for the development of pharmacology, could not have become so great had it not been supplemented and vitalized by the brilliance of Abel's personal achievements and by the example of his patient and persistent devotion to research. One of his earliest investigations was concerned with the occurrence of aliphatic sulphur compounds in the animal body. This experience helped him later in the successful crystallization of insulin, for he had found that fractions of insulin preparations contained labile sulphur in proportion to their hypoglycæmic power. He was one of the earliest workers on hormones, and succeeded in obtaining an active principle of the suprarenal gland in the form of a monobenzoyl derivative which he called epinephrine. Later Takamine obtained the free base, adrenaline. The determination of the chemical constitution of adrenaline and the discovery that it was a relatively simple body gave an impetus to that study of the constitution of other hormones which has developed so rapidly in recent years. Abel himself later found adrenaline in the secretion of the skin glands of the toad, *Bufo aqua*.

In another direction Abel did pioneer work, in devising a method, 'vividiffusion', whereby blood from a living animal could be diverted through a dialysing apparatus and then returned to the body. A study of the dialysates showed the constituents that occur free in the blood.

Abel also studied the active principles of the poisonous mushroom, *Amanita Phalloides*, and found two active principles, a hæmolysin and a non-hæmolytic toxin, the latter being responsible for the toxic effects of the fungus when ingested. Abel and Rowntree investigated various phthalein derivatives with the primary object of obtaining a purgative suitable for hypodermic use. They found that phenolphthalein was excreted solely by the kidney, and this led to its use later as a test for the functional activity of the kidney. Halogen substitution products of phenolphthalein were found to be excreted in the bile only, and this led to the development of tests for liver function by such compounds.

Abel worked also on the action of convulsant dyes, on the physiology of the lymph hearts of the frog, and did some of the early work in the newer domain of chemotherapy in his investigation of the action of antimony compounds in experimental trypanosomiasis. His work covered a wide field, as did that of most of his contemporaries in pharmacology, and was always characterized by imagination as well as by the skill and tenacity with which he pursued a problem.

After his retirement in 1932, Abel still had a room in Johns Hopkins University and up to the end was actively prosecuting researches on tetanus toxin. I still retain a vivid memory of listening to Abel, three years ago, when he outlined the purport of this investigation with all his wonted enthusiasm and modesty.

Abel was the recipient of many academic honours and became honorary or foreign member of many learned societies in many countries. Perhaps none would have given him greater pleasure and satisfaction than his election as foreign member of the Royal Society, which took place only a few days before his death.

During the time in which pharmacology has been emerging as a separate science with its own laboratories and followers, Abel has been an outstanding personality to whom that science must for ever remain in debt. His tall spare figure and genial presence will be sadly missed not only in his own country but also wherever men forgather who are interested in the progress of medical research. J. A. GUNN.

Sir Colin Mackenzie

WE regret to announce the death of Sir Colin Mackenzie, formerly director of the Australian Institute of Anatomy, at the age of sixty-one years.

Though Sir Colin gained great distinction as an orthopaedic surgeon yet he devoted himself to anatomy with an enthusiasm that might be expected to flow only from great genius. He was lecturer and examiner in anatomy in the University of Melbourne. He was a member of the Anatomical Society, served eagerly the Zoological Society of his city, established and furnished a whole museum with dissections of marsupials, strove to secure the preservation of the Australian fauna, and wrote their comparative anatomy in four volumes. His faith in anatomy induced the Commonwealth Government to erect in its Federal capital an anatomical institute under his direction.

Sir Colin's book, "The Action of Muscles", contains an epitome of his anatomical observations and ideas. In about fifty pages, under the title of principles, he states what he has come to believe about muscles. The reader is constantly referred to what happens in the wombat, frequently assured that the action of muscles can only be understood by an appeal to their evolutionary history, and is admonished to consider the behaviour of the primates and the assumption of the erect posture. The principles which he enunciates owe nothing to these allusions to the primates or to the illustrations of marsupial anatomy. The dissections of the wombat seem quite irrelevant to his principles of muscle action which have to do with the treatment of paralysis.

More than thirty years ago, when the treatment of fractures and muscular palsies was very bad, Mackenzie was preaching and practising his principles. He pointed out the error of describing a muscle as paralysed because it was unable to perform its maximum amount of work. More careful inquiry might discover that such a muscle still had some power. The muscles of the shoulder might not be able to lift the limb against gravity, yet perhaps could swing the arm from the side when the body was horizontal and gravity thus excluded. Inflamed nerve cells like any other inflamed tissue must be put at rest. A motor nerve cell could only be rested through its muscle. A muscle is placed in a state of physiological rest when its antagonists are kept over-

stretched. Thus by rest, and then utilizing the residual power left in an affected muscle, by patience and persistence he accomplished much. Muscle and tendon transplants were advised only when re-education seemed hopeful. He cut through much that was unimportant in the teaching of muscle action by his blunt insistence that a muscle had always one prime action to perform and only cooperated fully in other actions after its prime action had been fulfilled. He insisted upon muscle re-education and saw that this was only hopeful when the alteration of the attachments demanded the least change in function and when there was greatest cerebral control. Thus the gain in usefulness was in general far greater in the arm than in the leg.

His work in mitigating the terrible consequences of infantile palsy led to far greater interest in these matters. His experience was made available in the orthopaedic hospitals of Great Britain during and after the Great War. In his own city more people skilful in these matters are available than perhaps anywhere else. He deserves an honourable place amongst "The Menders of the Maimed".

Miss D. M. Liddell

WE regret to record the death, which took place on May 25 at the Old Rectory, Stratfield Turgis, Basingstoke, of Miss Dorothy Mary Liddell, well known as an experienced and fortunate excavator on archaeological sites.

Much of Miss Liddell's early experience and training in archaeological work was gained by her participation in the excavation of the famous Windmill Hill site of neolithic culture, explored by Mr. Alexander Keiller. The effect of this training, combined with a natural flair for archaeological work, were used to full advantage in her discovery and patient exploration of the Roman house at Lodge Farm, North Warnborough, and also in the discovery and examination under the auspices of the Hampshire Field Club of the extensive pit-dwellings at Chosely Farm, Odiham. Previously she had spent some seasons at work on Chilworth Ring, on Meon Hill. Her most lasting contribution to archaeological analysis, however, is probably the patient and detailed study she made of stamped impressions on neolithic pottery. The results of prolonged examination of innumerable specimens of potsherds and of a prolonged series of experiments and photographic work were embodied in an article in *Antiquity* in 1929, "New Light on an Old Problem", in which the central idea of the use of bird bones as an instrument of ornamentation had been suggested to her by the discovery of a large quantity of "West Kennet" pottery associated with a small bird bone.

WE regret to announce the following deaths:

Prof. E. W. Brown, F.R.S., emeritus professor of mathematics in Yale University, an authority on lunar theory, aged seventy-one years.

Mr. G. Nevill Huntly, consulting chemist, on August 2, aged seventy-one years.