

Although originally designed to hold what appeared to be the ample number of 20 to 24 research workers, the laboratory has already a population of no fewer than 38, of whom 11 are women. Included among these 38 are six members of the University staff, three Australians, a Canadian, a New Zealander, a citizen of the Irish Free State, an Indian, a Norwegian, and an American; whilst among the fellowships and exhibitions held are four Beit Memorial Fellowships for medical research, one Sir William Ramsay Memorial Fellowship, and two 1851 Exhibitions.

The following list of problems, among those with which this body of workers is engaged, indicates the extremely wide field with which modern biochemistry is dealing: cell oxidations both in the animal and the plant; the mechanism of the action of glutathione and other oxidising enzymes; the properties and mode of action of insulin and other hormones; bacterial metabolism; protective syntheses in the animal; inorganic metabolism; the constitution of casein, hæmatin, thyroxin; inositol metabolism; the rôle of phosphorus compounds in metabolism; vitamins; cancer; analytical methods; the colours of flowers; the pigments of insects; the optically active substances in blood.

Unless the promise of "Back to Methuselah" is fulfilled in this or some similar laboratory in the reasonably near future, the writer of these lines fears that he will not be able to be present at a ceremony which he would attend with the very greatest interest, namely, that of the centenary of the opening of the Sir William Dunn Institute of Biochemistry, when the magnificent possibilities of the new laboratories shall be in no small measure realised.

Problems of Muscular Receptivity.

SIR CHARLES SHERRINGTON, whose book "The Integrative Action of the Central Nervous System" has received world-wide attention, gave the Linacre Lecture in the Lecture Room of Anatomy and Physiology at Cambridge on May 6. He commenced by pointing out that Linacre (the founder of the Royal College of Physicians), who is claimed first by the Grammarians as one of themselves, also initiated medical teaching on the banks of the Cam and the Isis. Linacre was a researcher in science at a time when scientific research was practically in its infancy. It is therefore very fitting that the lectureship which he founded should be devoted to a consideration of the results of research in medicine.

The reactions of the central nervous system involve two kinds of receptors, those of the special sense organs and those of the proprioceptive organs. The former arouse conscious reaction: the latter seldom do. On the other hand, the latter initiate complex reflex actions: the former do not do so often, except with the intervention of consciousness.

The muscles which form the motor mechanisms of the body, whether it be to fell a forest or pronounce a syllable, are called into action not only by reflexes, but also by the initiation of the will directly or indirectly dependent on the receptors above mentioned. But these muscles themselves are known to possess receptors which respond to events taking place not only outside but also within themselves, thus the term used for such receptive organs found in muscles—the "proprioceptor organs."

For the experimental investigation of such proprioceptors the still surviving body of the recently killed animal has to be used. It lies motionless or stands motionless unless stimulated; it can initiate no movements since the cerebral hemispheres are destroyed. The muscles preserve their tonus, which

may be better called "postural contraction." To preserve this tone, the receptors somewhere must be reacting to stimuli, since the tone disappears when the nerves connecting all the receptors with the central nervous system are cut. Among these receptors are the pads of the soles of the feet and the skin of the limbs. Experiment shows, however, that these take little or no part. The principal part is played by proprioceptors in the animal's own muscles—those which hold up the head, those which keep the jaw closed, and those which keep it in the erect position against the action of gravity.

Experiment shows that a muscle, such as the knee extensor, which is about 100 mm. long, will with nerves intact exert some 2 kilograms tension when stretched to 101 mm. With nerves cut, no such tension is exerted. The intact muscle will, moreover, preserve the contraction even if it be allowed to return to its previous length of 100 mm. If by means of appropriate electric stimulation we abolish the contraction, we find practically none of it was due to the passive stretching of the structure of the muscles. To this tension set up in a muscle as the result of stretching it the term "the stretch reflex" may be given.

Returning now to the whole animal and applying these experimental results, we find the active posture of standing is the summation of a large, highly organised number of stretch reflexes. Moreover, we observe a high degree of adaptability on the part of the animal. The feet may be planted in various positions and still the posture of standing is preserved.

Sir Charles explained in detail how this adaptability was brought about. He then enumerated the parts of the problem which have yet to be solved by further research, and concluded his lecture by saying that one of his hopes was that, as a result of the Linacre Lecture which he was delivering, more recruits would join the ranks of physiologists for the purpose of attacking some of these problems.

University and Educational Intelligence.

DURHAM.—Dr. A. K. MacBeth, lecturer in chemistry at the University of St. Andrews, has been appointed reader in chemistry in the Durham Colleges. Mr. H. J. E. Dobson, of University College, London, has been appointed lecturer in chemistry.

LEEDS.—Applications are invited for the open fellowship of 200*l.* per annum established by the Institution of Gas Engineers for the prosecution of post-graduate research in gas chemistry. The latest date for the receipt of applications by the Registrar of the University is June 2.

LONDON.—Miss M. Tildesley, Research Assistant, Royal College of Surgeons, will deliver a free public lecture at University College (Department of Applied Statistics and Eugenics) on Tuesday, May 20, on Sir Thomas Browne, author of "Religio Medici"—His Skull and Portraits. A free public lecture (in English) will be delivered at 5.15 on Wednesday, May 21, in the physics lecture theatre of the Imperial College, Royal College of Science, by Prof. P. Zeeman, on "The Optical Effects of Motion." No tickets will be required for either lecture.

Applications are invited for the university studentship in physiology, value 50*l.* It will be awarded to a student qualified to undertake research in physiology. The latest date for the receipt of applications is May 31. They should be sent to the Academic Registrar, University of London, South Kensington, S.W.7.