

to meet modern requirements, should appeal to the intelligence of a progressive community. Meteorology would be followed on extended and more original lines. Magnetic observations, which unfortunately have never formed a part of the Observatory work, would be actively pursued, and the inconvenience occasioned by the want of accurate magnetic constants removed. The attention already given to seismometry could be increased with advantage. Classes are now held in

practical surveying and geodesy, and these, at present hampered by want of room and convenience, could be more fittingly accommodated.

There is a difficulty in finding the necessary funds, especially at this juncture, but if a judicious programme is submitted to the attention of those capable of carrying it into execution, the past history of Liverpool leads one to anticipate that even this obstacle will not be found insurmountable.

The Eleventh International Physiological Congress.

NATIONAL congresses of a general scientific character, like the British Association, have been held in various countries for about a century, but international meetings, limited to a particular branch of science, present greater difficulties, and are of more recent date. The disruptive effect of the Franco-Prussian war was long felt, and the meetings of physiologists, started on the initiative of Michael Foster thirty-five years ago, were at first anxiously confined to the smaller countries, like Switzerland and Belgium. In 1898 a Physiological Congress met at Cambridge, but no meeting took place in Germany until that at Heidelberg in 1907. After Vienna in 1910 and Groningen in 1913, Paris was chosen as the next meeting-place, but the regular succession was broken by the War. The Paris congress was indeed held in 1920, but some nations, who have contributed much to physiology, were not represented. As Prof. J. E. Johansson said in an impressive speech at the closing meeting of the congress held at Edinburgh on July 23-27, many will feel grateful to its president, Sir Edward Sharpey Schafer, for the return to an earlier tradition. It was, indeed, the truly international character of the Edinburgh meeting which contributed largely to its success. For successful it certainly was, both as regards scientific interest and personal relationships. Some twenty nationalities were represented, doubtless a record for physiologists and for Scotland, if not for Britain. The membership of 460 exceeded that of the very successful Groningen meeting (if ladies, not engaged in physiological studies, be deducted).

As regards the programme, the customary informal reception was held on the Monday evening, by Sir Edward and Lady Sharpey Schafer, in the Old College of the University. At the opening meeting on Tuesday morning, July 24, addresses of welcome were delivered by Capt. Walter E. Elliot for the Government, by the Rt. Hon. Sir Thomas Hutchison, Lord Provost of the City, and by Sir J. Alfred Ewing, Principal of the University; Prof. J. J. R. Macleod, of Toronto, delivered a lecture on insulin. Then followed a panoramic photograph of the whole congress. The Lord Provost and Lady Hutchison held a largely attended reception in the evening, and two days later the Congress visited the Scottish Zoological Park; for the rest it was occupied with a crowded scientific programme of about 200 communications, which were given concurrently in three lecture rooms, with additional laboratory demonstrations in the afternoons.

The so-called New University Buildings, which mainly constitute the Edinburgh Medical School, were not planned very satisfactorily, and are not entirely up-to-date, but they possess at least one advantage: they form a compact whole round a central quadrangle, and this feature was of great value for a meeting like the present one. The lecture rooms and other resources of several contiguous departments were simultaneously available. An indicator in each lecture theatre, kept continuously up-to-date, an-

nounced what papers or experiments were in progress in the other rooms. Occasionally the communications and their polyglot discussion took more than the 15 minutes allotted to each, and not all the 36 chairmen were sufficiently strict, but in the end the programme was completed without serious delay.

In addition to the opening lecture on insulin, by Prof. J. J. R. Macleod, two other addresses were given to the whole congress. Prof. Ch. Richet, of Paris, spoke on "Les voies de la connaissance autres que les voies sensorielles; étude de physiologie expérimentale," and at the closing meeting a paper by Prof. I. P. Pawlow, of Petrograd, on "The Identity of Inhibition, as a Constant Factor in the Waking State, with Hypnosis and Sleep," was read in English by his son, Prof. W. Pawlow. On the conclusion of this paper, describing recent experimental work on conditioned reflexes, the enthusiastic audience rose to its feet to applaud the veteran physiologist, whose participation in the congress was almost prevented by the refusal of a British *visa* on leaving New York. Permission to land at Southampton (instead of Cherbourg) was, however, obtained by wireless telegraphy during the voyage, through the enterprise of an American colleague and fellow-passenger, who communicated with an English physiologist.

At the closing meeting an invitation to meet in America was conveyed by Prof. A. J. Carlson, of Chicago, as president of the American Physiological Society, and an international committee was appointed to consider the possibility of accepting it, and should the economic obstacles prove too great, to select another place for the meeting in 1926.

It is naturally difficult to single out, for individual mention here, a few of the numerous communications, abstracts of which were issued in advance, arranged alphabetically in book form. They will appear later as a supplementary number of the *Quarterly Journal of Experimental Physiology*. On the first afternoon the section dealing with insulin attracted the largest audience; here F. G. Banting and C. H. Best, of Toronto, reported that they had found insulin in normal rabbit's blood, one unit for about 30 c.c. In the vitamin meeting, held at the same time, it was evident that the subject is attracting more and more attention on the continent. K. Hotta, a Japanese investigator working at Frankfort, described how the characteristic convulsions of pigeons, fed on polished rice, may be entirely prevented by feeding with cholesterol. In yet another section W. R. Hess, of Zürich, reported on the plans for founding a station for high altitude research near the terminus of the Jungfrau railway (about 11,500 feet above sea-level). The peculiar advantage of this site is its ready accessibility, as compared with the Mosso laboratory on the Monte Rosa, which can only be reached with difficulty and during a very limited period of the year; 120,000 francs have already been subscribed, and a further sum of 100,000 francs is considered necessary. This Swiss station is not intended

only for biological work, but also for meteorology, climatology, astronomy, etc.

Among the demonstrations, one by A. N. Richards and J. T. Wearn, of Philadelphia, attracted much attention. They showed how to collect glomerular filtrate by insertion of a very fine capillary into Bowman's capsule in the frog. The crowded laboratory must have increased the difficulties of this very delicate operation. Prof. Richards subsequently explained how the minute volume of fluid was analysed by the nephelometric methods of his namesake, the chemist. The filtrate is rich in chlorides which must be re-absorbed in the tubules, and hence a decision is arrived at with regard to rival theories of urinary secretion. Similarly, Bloor's nephelometric phosphorus determination, modified by H. Winterstein, of Rostock, enabled the latter to investigate the phosphorus metabolism of the central nervous system of the frog; the phosphatides here play a considerable part.

H. J. Hamburger and R. Brinkman, of Groningen, claim that the nervous stimulation of the heart sets free substances which influence the contraction of the stomach and gut in the same way as if the nerves of these organs are stimulated electrically; they term this humoral transmission of nervous impulses.

Papers of methodological importance were communicated by A. Kossel, of Heidelberg, who has discovered in the dinitronaphtholsulphonic acid of naphthol yellow a reagent for the quantitative precipitation of arginine and for the isolation of many other bases, and by E. London, of Petrograd, who described a new method for investigating intermediate metabolism, consisting in the introduction of permanent metal cannulae into deep-seated abdominal blood vessels.

Owing to the circumstance that a conference on the

physiological standardisation of drugs met under the auspices of the League of Nations at Edinburgh just before the congress, pharmacology was well represented. At the congress, J. J. Abel and C. A. Rouiller, of Baltimore, described the further purification of the oxytoxic principle of the pituitary, which they have now obtained as a substance which is 1000-1250 times as active as histamine phosphate on the guinea-pig's uterus; the product also possesses powerful pressor and diuretic properties.

W. E. Brown and V. E. Henderson, of Toronto, find that ethylene will produce complete surgical anaesthesia, being more potent and in other ways preferable to nitrous oxide.

During the congress a number of important cinematographic demonstrations were given; perhaps the most interesting was by A. Krogh, of Copenhagen, which showed, under great magnification, the effect of various agents on capillary circulation (this film should prove of immense value in teaching large classes).

In connexion with the congress a Harvey medal, the work of Mr. Pilkington Jackson, the Edinburgh sculptor, was given to every member, and the University of Edinburgh conferred honorary degrees on eight distinguished foreign physiologists who were present, namely, Prof. F. Bottazzi, professor of physiology, University of Naples; Prof. W. Einthoven, professor of physiology, University of Leyden; Prof. W. H. Howell, professor of hygiene, Johns Hopkins University, Baltimore; Prof. J. E. Johansson, professor of physiology, University of Stockholm; Prof. A. Kossel, professor of physiology, University of Heidelberg; Prof. H. H. Meyer, professor of pharmacology, University of Vienna; Prof. I. P. Pawlow, professor of physiology, University of Petrograd; and Prof. Ch. Richet, professor of physiology in the Faculty of Medicine, Paris.

A Seventeenth Century University of London.

EVERY one knows that London was the last great capital city to be provided with a University. The reason for this is not obvious, but the fact remains that after the failure of Sir Thomas Gresham's great aspiration in the seventeenth century, the mere idea of a University seems to have been dropped until it was revived by the Benthamites in the nineteenth century. But not altogether: a solitary enthusiast now and again raised his voice. In 1647 there was a curious proposal launched in a pamphlet, now extremely rare, for remedying this deficiency. The proposal came to nought, like many educational projects, not only, we may surmise, because the country was in the grip of the Civil War, but, as will appear, by reason of certain difficulties inherent in the scheme. The title of the tract, or rather part of the title—for it is a true child of the seventeenth century, when long titles were the vogue—is "Motives grounded upon the Word of God, and upon Honour, Profit, and Pleasure for the present Founding an University in the Metropolis London, . . ." and the author chose to be known as "a True Lover of his Nation, and especially of the said City."

The True Lover is manifestly a Puritan, and his main concern is with the shortness in the supply of preachers of whom he estimates that we want more than 20,000, "and are hopeless of supply, without other provision than yet we have." The old universities, even at their prime, could not bring forth such numbers. Now was the golden opportunity for London to remedy this lamentable defect "when so many great houses may be had and made Colleges of, with so little alteration, and Pauls Church and London-House be the publike Schooles." Teachers

were to be had on as easy terms as buildings: "by reason of the Warres in other Countries, you may now have the choicest of their Professours of the Arts."

But the True Lover's financial plan displays greater optimism than knowledge of human nature warrants. If every sincere Christian in London gave up one meat meal a week it would be possible to maintain, he thinks, twenty thousand "poore Schollars," and a similar abstention throughout the Kingdom an hundred thousand. This greater number by no means dismays the True Lover; on the contrary, it stirs his enthusiasm. After a general course of military training, twenty thousand of the "choycest" would be selected as ministers, the remainder being "employed in Trades, or Navigation and show themselves for the defence of this country Lions on the Land, and Dolphins on the Seas." The elect would also "Discipline their Parishes and put all England in Israels posture so that we might be a Nation of Souldiers and defend our Religion both with Divine arguments and (if need required) with corporall Armes also."

If the True Lover had read Milton's famous *Tractate on Education*, published three years earlier, he had not been impressed by it, nor had he apparently breathed any of the ideas which were a few years later to bring about the first meetings of the nascent Royal Society. His notions of curricula may be described as humanistic, coloured with a pronounced utilitarianism. Three colleges were to house the hundred thousand. In one nothing but Latin was to be spoken, and in two years the scholars would thus be able to speak as good Latin as they do English. "How easily afterwards," he exclaims, "would they